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ORIGINAL ARTICLES.

RECENT JUDICIAL EVOLUTION AS TO CRIMINAL RESPONSIBILITY OF INEBRIATES.

Read in the Section of Neurology and Medical Jurisprudence, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY CLARK BELL, ESQ.,

PRESIDENT AMERICAN INTERNATIONAL CONGRESS OF MEDICAL JURISPRUDENCE.

By the common law of England it was conceded the words "*non compos*" meant a total deprivation of reason. Lord Coke divided it into four parts or as he called them "manners."

1. The idiot or fool. 2. He who of good and sound memory at birth lost it by visitation of God. 3. Lunatics who have lucid intervals and sometimes of good sound memory and sometimes *non compos mentia*. 4. By his own act as a drunkard. So that drunkenness at and by common law, under certain circumstances, was a form or species of insanity. By the same common law it was held: 1. That the drunkard was responsible for all his acts criminally, even if the state of drunkeness was such as to make him insensible to his surroundings and unconscious of his acts. 2. That drunkenness instead of being any defense to a charge of crime committed while in a state of intoxication, was not only no defense but that it aggravated the act.

These doctrines were upheld by the English courts in Damarees case 15, St. Tr. 592; Frost case, 22 St. Tr. 472: Rex v. Carroll 7 c and p. 115; and these doctrines have been held likewise in nearly all the American States.

In Alabama, State *v.* Bullock, 13 Alabama 413; in Calfornia, People *v.* King, 27 California 507; in Connecticut, State *v.* Johnson, 40 Connecticut 106; in Delaware, State *v.* McGonigal, 5 Hartford 510; in Georgia State *v.* Jones, 20 Georgia 534; and in nearly every American State, similar decisions have been made.

The common law which would not uphold a deed, will, or contract, made by a drunken man in an unconscious state of intoxication, would hold the same man criminally liable for every act constituting a violation of the criminal law. To-day we are regarding those views as legal curios and relics of the past. The law should have its museums for the preservation of its antique anomalies. A silent unconscious change has been wrought in the law, not by legislation, but by the growth of ideas and the diffusion of knowledge Insanity is now demonstrated to be a disease of the brain, of which it is itself an outward manifestation. Inebriety is also shown to be a disease of the man manifesting itself through brain indications, which demonstrate it to be a form of insanity wholly dominating the volition and beyond the power of the victim to control and it is now so treated. The essential element of crime *intention* hardly fits into the acts of the unconscious inebriate, who while *blind* or *dead* drunk, kills an innocent victim, and the absence of motive like the absence of *intention*, are missing links in that chain, which the law exacts, in regard to all criminal action. It would be next to impossible now, to find a judge willing to charge a jury, that a crime committed by a man in a state of intoxication, in which the accused was unconscious of his act, or incapable of either reflection or memory should be placed on a par, with one fully comprehended and understood by the perpetrator.

Buswell says in speaking of the old doctrine of drunkeness being an aggravation of the offense "it is apprehended that this is the expression of an ethical rather than a legal truth." (Buswell on Insanity). Such considerations compel us to inquire: What is law? There are two schools of thought regarding it.

Webster, the great expounder of the American constitution is credited with saying, "Law is any principle successfully maintained in a court of Justice." This represents one school.

Richard Hooker in his ecclesiastical polity represents the other, he says of law: "There can be no less acknowledged, than that her seat is the bosom of God, her voice the harmony of the world, all things in heaven and earth do her homage, the very least as feeling her care, the greatest as not exempted from her power." The gulf intervening between these two extremes is as wide and deep as that which divided Abraham and Lazarus in the parable of our Lord.

The framers of the New York Penal Code, without the courage to hew down the error of the old doctrine, engrafted thereon a provision, that enables a jury now in that State, to pass on the *motive* and the *intention* of the unconscious and wholly insensible inebriate; so that by law now in New York since the Penal Code of that State, a conviction would in such a case be well nigh impossible.

How have the English judges met the question? In 1886, Mr. Justice Day in Regina V. Baines at the Lancaster assizes, charged a Lancaster jury: "That if a man was in such a state of intoxication that he did not know the nature of his act or that it was wrongful, he was insane in the eye of the law; and that it was perfectly immaterial whether the mental derangement resulting from such intoxication was permanent or temporary." In 1887, Chief Baron Palles, held that "if a person from any cause, say long watching, want of sleep, or deprivation of blood, was reduced to such a condition that a smaller quantity of stimulants would make him drunk, and that would produce such a state if he were in health; then neither law nor common sense could hold him responsible for his acts, inasmuch as they were not voluntary but produced by disease."

As long ago as 1865, in the case of Watson tried at Liverpool for the murder of his wife before Baron

Bramwell, the evidence showed that he was laboring under delirium tremens. After the act he grew calm and said that he knew perfectly well what he had done and that his wife was in league with men who were hidden in the walls. "Baron Bramwell, who favored hanging insane men who committed homocides when acting under an insane delusion, if of sufficient intelligence to understand the nature and quality of the act and its consequences, tried the case and charged the jury, "That there were two kinds of insanity by reason of which a prisoner was entitled to be acquitted; probably the jury would not be of opinion that the prisoner did not know the quality of his act, that it would kill and was wrong, but it was still open to them to acquit him, if they were of opinion that he was suffering from a delusion leading him to suppose that, which if true, would have justified him in the act; one more remark he would make, viz.: That drunkenness was no excuse and that a prisoner cannot by drinking qualify himself for the perpetration of crime, but if through drink his mind had become substantially impaired, a ground of acquittal would then fairly arise.

The prisoner was acquitted. Under the English law, there is no right of appeal to the convicted homicide as in the American States, and so it is difficult to find the decision of English higher courts on the questions involved in the discussion.

In the American States no person is executed except on the decision of the highest court of the State if the accused desires it and appeals; in England the appeal does not lie as a matter of right and so the opinion and dicta of the English trial judges form the real body of the law of England upon these questions.

Baron Bramwell undoubtedly regarded Watson as entitled to an acquittal, and the case shows a remarkable result in this respect; had he been insane and committed the homocide under delusions which dominated his will and controlled his action, he would have been convicted if he had sufficient intelligence to understand the nature,and the quality of the act, but the drunkenness which had caused the attack which resulted in delirium tremens with a diseased condition of the brain also resulted in a delusion, which controlled his mental powers, so as to render him irresponsible at law.

In 1888, Baron Pollock held, that the law was the same where insane predisposition and not physical weakness was the proximate cause of the intoxication." The English Home Secretary, Mr. Mathews is one of the ablest men connected with the English Government.

Under the English system he has the power to commute or modify the sentence of the courts in criminal cases, and he exercises it with as much effect and more in many cases than would the reversal of the Appellate court, if the right of appeal existed.

No eye in Great Britain sees more clearly or more intelligently the action of the criminal courts than his. It is his province to correct errors and redress grievances and abuses, if such exist or occur in the criminal jurisprudence of Great Britain. He has recently named a commission composed of Mr. J. S. Wharton, Chairman, Sir Guyer Hunter, H. P· Mr. E. Leigh Pemburton, Assistant under Secretary of the Home Department: Mr. Daniel Nickolson, Superintendent of the Broad Moor Criminal Lunatic Asylum, and Mr. C. S. Murdock head of the Criminal department, to inquire into the best mode of treatment and punishment for habitual drunkards.

Mr. Matthews says regarding the appointment of this committee, "Great difference of opinion has arisen as to what kind and degree of punishment for offenses committed by habitual drunkards would be the most effectual, both as a deterrent and with a view to the reformation of such offenders; it appears to me that advantage would result from an inquiry being made into the subject." It may be fairly claimed so far as the British Islands are concerned that the old common law rule no longer is enforced there, and that inebriety as a disease is now not only recognized as an existing fact, but that the jurisprudence of that country is receiving such modifications as are necessary to fit it, for the advance made by scientific research.

We are doubtless near similar results in the American States.

ON CHOREA, VIEWED FROM THE STANDPOINT OF COMPARATIVE PATHOLOGY.

WITH AN ENTIRELY NOVEL THEORY AS TO THE CAUSE OF THE MUSCULAR TREMOR AND INCOÖRDINATION, AND A NEW THERAPEUTICS.

Part of a Clinical Lecture delivered February 3, 1893.

BY HORATIO C. WOOD, M.D., LL.D.,

PROFESSOR OF MATERIA MEDICA, PHARMACY AND GENERAL THERAPEUTICS, AND CLINICAL PROFESSOR OF NERVOUS DISEASES, IN THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF PENNSYLVANIA, ETC.

[Stenographically reported for THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.]

Gentlemen:—I am going to occupy your attention this morning with the discussion of a subject which is of great scientific interest, and which may prove to be a discovery of considerable practical importance. Some years ago, as you know, I gave much attention to the subject of the physiology of the choreic movements. At that time, I made a number of experiments upon the lower animals, especially upon dogs, and succeeded in demonstrating, in the dog, that these movements had their origin in the spinal cord. I found that in the choreic dog, after dividing the spinal cord in the dorsal region, the movements continued in the posterior extremities just the same as before, save that, after the division of the cord, the muscular movements in the fore-limbs and hind-limbs were no longer synchronous; that is to say, rhythm did not agree as before.

On coming to apply these observations to man, I must tell you that we have in the human subject two varieties of choreic movements: in one form, they correspond with those in the lower animals. This is the variety known as "St. Vitus' dance," which is rare in adults but common in children, and undoubtedly affects the spinal cord, as I shall presently explain. The second form is common among adults but rare in children. In it the movements are more violent and even convulsive. These have their origin in the cortex of the brain, from minor lesions in the motor areas; but there may be widespread and destructive lesions in the motor regions of the cortex. I may illustrate this by a case that I saw several weeks ago. It was that of a boy, who was found in an out-house, unconscious, pulseless, appar-

ently dying, and, indeed, at first, was thought to be dead by those who found him in this condition. He was suffering from poisoning by inhaling coal gas. He was carried into his home and resuscitated; but it was found, after regaining consciousness, that he had violent, apparently purposive movements of the arms and legs, which he could not control. The limbs were thrown about by irregular, muscular contractions, and he was kept in bed with difficulty; in other words, he had a furious attack of acute, cerebral chorea. I attributed the chorea to multiple cortical embolism, the result of the arrest of circulation during the period of suspended animation, and I said that the case would die. The patient did die a few days afterward, but the choreic movements never ceased until death. Owing to some misunderstanding, I was not at the autopsy, and no parts of the brain were saved. It was found intensely congested, but there was no careful microscopical examination of the cortical regions of the brain, such as would be required to establish my diagnosis. This is to be regretted, but cannot now be helped.

Returning now to the form of chorea first mentioned, which usually occurs among children, I have arrived at the conclusion that the cause of the choreic movements is a paralysis, or depression, of the inhibitory function of the cells of the spinal cord. You know, from your studies in physiology, that there are in the spinal centres, as elsewhere in the brain, motor cells, and others which inhibit or arrest the discharge of motor impulses. It has been denied that inhibition exists; but I think the researches of Gaskill have demonstrated that in the heart (and as I believe, everywhere in the body), there is a period of functional excitement with discharge of force and destruction of tissue, and a period of functional quiet with repair of tissue. The acceierator nerve stimulates to functional activity; the inhibitory nerve to functional rest and reparative activity.

Now, it has occurred to me that the choreic movements in the form under consideration, as they occur in the child, are due to loss of inhibition. If you will observe a choreic child attempt to pick up an object such as a piece of paper from a table, you will see that the muscular movements are exaggerated so that the hand moves through a much wider range of motion than in health, the result being that the child will be obliged to make several attempts before the object is attained. The wider range of motion in this case is evidently due to a failure to arrest the motor impulse at the proper period. There has been a failure of the inhibitory function of the spinal cord to arrest the movement at the proper time. This explains the causation of the peculiar muscular movements in this form of chorea. I believe that it is based upon a new observation in the physiology of the spinal cord; it is new, at least, as far as my reading goes.

For some time I have had this in my mind, and have been casting my thoughts around endeavoring to find out how to confirm this theory. It finally occurred to me that I had been teaching you, in my lectures on therapeutics, for many years, that quinine has the property of exciting the action of the spinal inhibitory cells. You recall Chaperon's experiments, which established the fact that in small doses quinine causes in frogs a lessening of reflex activity, which, however, is restored by section of the medulla, thus showing the independent action of the spinal cord when relieved from the inhibition coming from above. This led to the discovery of the inhibitory centres of the medulla by Setschenow and the location of Setschenow's centre. Small doses of quinine stimulate Setschenow's centre, and lessen reflex activity; but large doses cause permanent paralysis of reflex activity. It is evident that the larger doses act upon the spinal motor cells in the same manner that the small doses affect the higher centres. There are many other facts which demonstrate the existence of spinal inhibition; but their discussion would lead us too far afield, especially since they do not bear directly upon the subject under consideration to-day.

Some years since Ringer and Murrell brought forward the theory that atropine is a paralyzer of inhibition. You remember the experiments of Fraser. He had killed some frogs with atropine, as he thought, and threw their bodies at night on the laboratory floor; but the next morning, on coming into the room, to his surprise he found all the frogs alive and in active convulsions. The only plausible explanation of this is that atropine, in the proper dose, paralyzes both spinal motion and motor inhibition, and that the effect of inhibition passes off and allows excessive motor discharge, and this produces violent muscular movements, not because of motor excitement, but because the restraining force of inhibition has been lifted off from them.

Sedgwick, of London, some time ago, objected to the theory of spinal inhibition, because of his discovery that atropine prevented the primary loss of reflex movements from being produced by quinine, which I referred to a few moments ago, as demonstrated by Chaperon. I think, however, that this fact cited by Sedgwick is really in favor of the theory, rather than in opposition to it, as he supposed. quinine stimulates inhibition and atropine paralyzes it, therefore atropine would naturally set aside the physiological action of quinine. Does it not become apparent to you that Ringer and Murrell are correct in explaining the action of atropine? Can it be otherwise than that atropine and quinine oppose each other in their action upon the spinal cord?

In casting around for some means of testing my theory of the production of choreic movements, I first obtained some choreic dogs, to try the therapeutic experiment upon. I will first call your attention to this long roll of blackened paper upon which you observe this kymographic tracing, the register of the dog's choreic movements. Here you notice the continuous and rhythmical contractions of the muscle indicated by the needle upon the paper as it revolved upon the drum of the instrument. At this point where the movements begin to increase in their range, the animal had a hypodermic injection of atropine. These injections were repeated until two and a half grains (Gr. 0.15) had been given. Coincident with the administration of atropine the tracings show increase of amplitude, until they are increased fourfold. This increase seems to be attributable to the effect of the injections and, thus far, the results are exactly in accord with previous reasoning. The animal at this point, had an injection of six grains (grams., 4) of quinine, and immediately the movements declined and, in the course of from twenty to thirty seconds, entirely ceased. This is beautifully shown by the tracing. The amplitude of the excursions of the needle rapidly diminishes until they

cease absolutely. Now as to this action of quinine there can be no possibility of doubt. The atropine I have only experimented with once in a case of chorea; but the quinine I have used in a number of dogs and am positive that the quinine arrests the choreic movements in dogs, so that, as far as this goes, it carries out my theory.

My next line of investigation was to study the condition of the reflexes, such as the knee-jerk, in chorea. *A priori*, what would we expect to find in regard to the knee-jerk, in chorea? The motor-cells of the cord are in a state of weakness in a case of chorea; but the inhibitory ceils are in a state of greater weakness. This would lead us to expect that in the first place, the reflexes would be less than normal. When, however, a voluntary movement is made, on account of the failure of inhibition, the motor impulses from neighboring cells would overflow, and reinforce the motor impulses beyond the normal amount and the reflexes would be increased. (Explanation of reinforcement, illustrated by drawing a diagram of spinal cord with motor and inhibitory cells, upon the blackboard.) In the normal condition, this overflow would be checked by the inhibitory cells, but when these are weakened experimentally, or by disease, it is not so checked and the reflexes are extraordinarily increased. I wrote to Dr. Wharton Sinkler requesting him to communicate to me his observation as to the condition of the reflexes in chorea. He replied that the phenomena are different from what might be expected, the reflexes are diminished in all cases of chorea; but that he had observed the curious fact that the knee-jerk in chorea is greatly increased by reinforcement. That is to say that, at the time the knee-jerk is tested, if some other muscular movement be performed, like extending the arms or tightly clenching the fists, the knee-jerk is greatly exaggerated. This I explain by the weakening of inhibition and the consequent overflow of motor impulse as already mentioned.

So far this is of scientific importance only. It appears to me as if, in the practical study of chorea, we have hitherto overlooked the phenomenon of inhibition. The phenomena of chorea, like those of hysteria, are not phenomena of increased excitement of motor centres; but of paralysis of inhibition. The conjunction of increased muscular and nervous discharge with evident weakness of the spinal centres is explained by the fact that the motor cells are weak; but the inhibitory cells are weaker still. Sometimes in chorea in the child, as commonly in the dog, the movements are rhythmical, and although they are constant the child does not get tired. No one in health could continue this motion for half an hour without fatigue. How can this be explained? In the anatomical rooms, you have learned to refer anomalies to a reversion to a lower type. You have seen how a stump is produced by evolution to a certain point for a certain purpose in the case of the animal, and that is altered by higher evolution in man. Now, I believe, that we may have a physiological reversion as well as an anatomical reversion, and applying this to the spinal cord, we may have a reversion of the function of the motor cells to those of the lowest type of nerve-cell in which the discharge of force is rhythmically continuous. Just as the beating of the heart never ceases during life, so it is the function of the primitive nerve-cell to unceasingly give off force. The strange phenomenon of lack of tire in choreic movements, then may, in this way, be explained on the principle of reversion.

Applying these investigations to cases of chorea. it occurred to me to give quinine a trial. I may say, that it has been only during the last ten days that I have thought of this subject from the clinical standpoint. I have thus far had the opportunity of employing it in only one case in the human subject. It was a child with well marked chorea, brought by her mother to the Out-patient Department. She was ordered full doses of quinine, and was brought back in four days with the report that she was very much improved. I spoke to Dr. Pearson, of the Veterinary Department, and asked him to try the alkaloid in choreic dogs. He told me in the first place that he had never found anything that would do choreic dogs any good; his experience is that chorea in dogs is incurable. Here is an English setter dog suffering with chorea. One week ago he could not stand upon his feet, owing to violent choreic movements. He had quinine given freely by the mouth and within twenty-four hours, the movements decreased; he now walks about and is apparently almost well; at least, he has very little left of his chorea. So far as practical results go, it therefore looks as if the theory would stand the test of experience; but whether our present prospect is simply a mirage or not, time alone can tell.

I now bring before you two children suffering with chorea. The first one is seven years of age, and small and poorly developed for her age. The second is ten years of age and appears to be in a better nourished condition; but in the second, the chorea is more marked and of shorter duration than the first, in which, according to the mother, it has existed more or less for four years. I will put both of these patients upon the quinine treatment and will report the result at our next meetning.

ADVANCEMENT OF SURGERY.

A Paper Read before the Vigo County Medical Society, April 1890.

BY JOHN E. LINK, M.D.,
OF TERRE HAUTE, IND.

Why I should have been selected to read a paper to the Society on the "Advancement of Surgery" is incomprehensible to my mind, unless it was for the purpose of inducing me to post myself more thoroughly upon the literature of the subject. Sure it is, that I, probably of all the members, have paid less attention to the serial productions, as published in our overloaded journalism, than any other member here. And I think it is a well understood fact, that I read less of our periodical literature, as well as our secular papers, than any other member of this community. What has stood the test of ten years' popular favor becomes a part of our texts; and compared to-day with what has been introduced as novel and good, not one-tenth part bears the test of the decade. For this reason I have declined to place any of my thoughts or methods into the hands of publishers, and only a few of the things that presented themselves as original, from observation or thought, have found their way into print through the pen of others more ambitious to write. And I say to you to-night that I had far rather have come here before you, presenting a patient with oral explanation, than to attempt to write. It is generally understood that the only way for a man to bring himself into prominence

is to write, but a man's good works live after him in spite of silence. James R. Wood wrote little or nothing, yet his name stands out prominently as an original thinker and tireless worker. And so, if I criticise some of the newly accepted theories and practices, as appear in our medical journals, in surgery, adversely, I hope you will not lay the disappointment you realize in this paper at my door, but to the source—the appointing power.

Taking up the recent text-books of to-day and comparing them with those of the last fifty years, the enthusiastic student of journalistic surgery will surely be surprised, especially in the more common and frequent cases that the surgeon is called upon to treat.

From what I have said it might be inferred that I am a non-believer in progression in our science—in evolution. Such is not the case, I assure you. I believe not only in mind evolution, but in all organic-living, process-evolution—that all things that live a true and healthful life add something to the process of such existence, that for every healthful spear of grass that grows the element that produces it is made richer for the production of others of its kind, providing each has the advantage of improvement. For the advanced speed in training, the possibility of the next horse to improve is greater. Mr. Beecher, in a sermon preached in Plymouth Church, said, as one horse makes a given advanced record on the track, the whole herd comes up to it, and so another and another, attributing it to the will of the trainer. I attribute it to the cultivation of a process in nature—a cultivation of the soil of speed, as it were, and to me, as tangible as the fertilizer of the agriculturist and horticulturist.

I appear, therefore, before you to-night to present in conscientiousness' sake my views of what truly constitutes the advancement of surgery, and to protest, in some instances, against what I believe to be the fallacies of, and detrimental to our science and practice. To enable us to overcome the obstacles in our way and to reach our destination, it sometimes becomes necessary, like the school boy, who as an excuse for tardiness, said "the ice was so slick that for every step he made forward he slipped two back," and when the teacher reminded him that if such had been the case he never would have reached there, said, "Oh, but I turned around and went the other way." So to-night I ask your indulgence in the experiment of turning back in our efforts to advancement.

The fundamental principle of the practice of surgery and medicine is anatomy and physiology. This, of course, all will admit. The sun, Emerson says, shines in the eye of the man, but into the soul of the child. As we grow older in our science I fear the beauties of the underlying and overarching principles of our profession are overlooked in too many cases, and only the poet, the enthusiast in nature, stops to see, as Emerson again puts it, the "beauty in a corpse."

I was surprised to notice recently in one of our daily papers the faults and disadvantages of too much newspaper reading. How I should like to see the same good sense and frankness appear in some of our medical journals. I take but one—The Journal of the American Medical Association. I think it is to their interest, and that they have the judgment necessary to select from among them all the best. I glance over each number, and at the end of the year I again run over the index and select and read upon such topics as have presented themselves to my mind as of interest. I do not hold myself, or my methods, up before you as infallible or necessary to success. What one conscientiously believes to be right, one conscientiously desires others to know of and have the privilege of following.

I attended one full, and parts of two courses of lectures, devoting my whole time, outside of listening to didactic teaching, to the dissecting room, and never attended a dozen clinics in the hospital. I loved the study, though hard, that gave me the grounds for future thought and observation in after years of practice, and never, either in my military experiences in hospital or in civil practice, did I allow a winter to pass, for fifteen years, without a careful and thorough dissection of one or more human subjects. I believed then, and can now say that I am convinced, that with a clear insight into the human organism, a sure foundation for reflection and action is laid. I never now feel the least timidity as to myself, and never approach a patient without assurance and sympathy. The engineer who knows, as is often said, every bolt and screw of his engine, not only handles it well but loves it with a tenderness—else how should he have studied it so. And now the greatest regret I have is that opportunity has not made it possible for me, or more easy for me, to have continued my investigations and to have kept my memory fresh in the minutiæ of anatomy. One of the first advantages, and consequent advancement in surgery as well as practice, is the facility afforded by our State, and many of the others, in obtaining material for dissection. The new beginner can have the unclaimed dead galore for filling in his leisure hours in improvement, and the gratification of his increasing taste for knowledge. When a thorough knowledge and familiarity with the dead subject is attained, whether in the practice of medicine or of surgery, the practitioner can, with good judgment, approach the sufferer confidently, without undue assurance. Therefore, I have seen fit recently, in the view of too much "antiseptic surgery," to designate most of my practice, "physiological antiseptic surgery, *versus* germacidal antiseptic surgery." Antisepsis has its place, I admit, but he who anchors his faith in it alone, or in most part, follows the shadow instead of the substance. What has been done by the leading minds in advancing the theory and careful methodical practice of antiseptic surgery is well; and careful, systematic work and thought is improvement. He who is unusually careful of the little things cannot well neglect the more important. All intelligence, all knowledge on any scientific and practical subject is advancement—is improvement. Anatomy is the great ocean of intelligence upon which the true physician must sail. Bacteriology is but one little harbor—with its present boom. All credit to the men who by days and nights of study, have unearthed the little fellows and made them visible to the eyes of all through the microscope, but pity to him and his patients who sees only through the lens of the microscope, neglecting the greater, seeable with the eye and tangible to the brain. That these microbes are the causes of disease, *per se*, is not proven, and that we should accept them as such, there is no more reason than that the maggot in the dead horse should be held responsible for his death, or that the wiggle-tail in the rain barrel should be

taken as cause for the turbid and generally changed condition of the water. A few years ago it was the popular belief that "bots killed the horse." I remember my first post-mortem. It was in the case of a fine three-year-old, which died after an illness of two or three days. I, then aged about fourteen, followed his remains with sharpened butcher knives to the woods over against the cliff, and made a kind of barn or trap door opening into his belly, where I found the contents of stomach promiscuously distributed. What at first looked like a spider's web, proved to be the shreddy perforated remains of a stomach. At the small remaining swallow, or œsophagal end, I found a mass, probably a pint or more of grubs—a living mass of bots. That settled it; the horse had died of bots. Then next, what will kill them? My father, the hired man, and a number of neighbors, began the experiment, first with lard and turpentine, the accepted treatment for bots. In this they lived and moved and had a being—yes, even in *pure* turpentine. Nothing, as I recollect it, seemed to be instant death, excepting pure nitric acid—that settled them. And so we, in our wisdom, in the ocular appearance of things, decided that for bots there was no cure. Now, need I say, we know all horses in perfect health have living bots in their stomachs, living happily with the horse as their friend, they even, the farrier, may tell you, his benefactors. When disease disturbs the secretion of the glands and they are starving, they take hold of the little glands, eating them for their nourishment, and after death destroy the organ—not before.

That bacteria are the cause of disease to my mind there is no proof. That they are scavengers, I take such data as above, for proof, together with my clinical experience and observation to the contrary, extending over twenty-five years, with at least a part of the time, as good opportunity to observe as any man living. My only sin of omission, punishable in ridicule by an ungenerous profession, is my living in a small city instead of London or New York. Antiseptic surgery, so-called, had its origin in Listerism, which was the carbolic spray, though now we are told that Lister does not now advise the spray, but other methods and appliances. To express myself plainly, in brief, everything that is cleansing is claimed as Listerism. That "cleanliness is next to godliness" I have never heard attributed to him, and yet we all accept it. But knowledge is godliness, and has no better exemplification to me now than in physiological surgery.

In the treatment of simple fracture and dislocation, there has been no marked advancement, excepting in appliances—each having a peculiar method of his own selection, but the text-books give us about the same—in fractural appliances Buck, Hamilton, and others more or less ancient.

Commerce has done much for us in the way of convenience. The rubber bandage, accredited to Esmarch—the rubber drainage tube—but little better than the old tent—which, had it been as universally applied, would have done much good in this line. The enthusiasm of men in advertising these things has caused a more general application of the principle and are an advantage in surgical practice.

The first thing that strikes me in the comparison of the old and new text-books of the last fifty years, is the illustrations; the artist having done a great part, commerce filling in the supply of conveniences; the rubber coil for cold application to the head, the inhaler for chloroform and ether—largely the devices of Esmarch and a few others, whose names add to their popularity. Esmarch's bloodless operation is an innovation, and worthy of the name of advancement, though taking the place in principle, to some extent, of the old tourniquet. Surely this method of controlling the arteries high up in the extremities, the axillary in shoulder joint operations, the common iliac and abdominal aorta, are a great convenience to the profession, an improvement over the pressure by hand, entrusted to an assistant, as in my early experience.

Abdominal surgery has made wonderful strides in practice since the war; and we can only wonder at the blundering of our former negligence and oversight, the result of a kind of superstition as to sacredness in invasion, rather than any proof to the contrary. Antiseptic surgery too often gets the credit, though McDowell, in his successes, did not know or practice it. And to-day Tait is notorious for his ignoring it, though one of our most successful gynecologists.

But to traumatic surgery I wish to call your attention, more particularly to penetrating wounds of the abdomen. In relation to the thought as to the hinderance in superstition, I wish to call your attention to the unreasonableness of the argument used a few years ago—and even now for all I know—that women bore these operations—abdominal sections—better than men, maybe from the thought of the difference of the pelvic organs, in contradistinction to the higher viscera. I heard this argument advocated three years ago at the meeting of the International Congress, at Washington. I only now wish to say that it is absurd and will not bear the test of clinical experience any further than that woman's resolution often serves her a better part, in trying times, than man's.

If I were asked to name the part in surgical practice the most fully typifying the advancement of the profession, I should unhesitatingly say, the localization of certain centers of cerebrum enabling us to locate pus cavities within the cranial cavity. This is of far more scientific importance, requiring a much more exact knowledge of the part than the abdominal viscera. In the latter, the novice may venture with but a cursory knowledge of anatomy. The antiseptic fad is here barred by necessity of a knowledge of exact science, not coverable by the cloak of ignorant assurance. The ambition of notoriety here stands halt, with cap in hand, doing reverence to the truly learned.

I have held in all my work before medical associations that there is little or no special knowledge of anatomy required to do abdominal surgery; and that promptness in action, in case of injury to the abdominal viscera—requiring surgical interference—was the great desideratum; that the general practitioner should be held responsible for prompt action in opening up the cavity, in cases of penetrating wounds, stopping hæmorrhage and sewing up the perforated bowels; that neither anatomical knowledge or surgical skill is required. The farmer does as much, with impunity and little loss of life, spaying pigs. With a butcher's knife he eviscerates the slaughtered animal, seldom or never cutting a gut. As for the ligating of a fold of mesentary or omentum containing bleeding vessels, one with skill to serve in sewing

a button on his trousers is sufficient. And in the sewing up of a wound in the bowel, the interrupted suture or any other, as well as the continuous, will do the work of preventing leakage, and any material for suture answers the purpose almost as well as the catgut or silk. Nature in her endowment, with resources to meet demands in the exudation of lymph with omentum for patch will cover effectually whip cord, if necessary, and sloughing finds its way in natural process into the cavity of the bowel.

I could cite instances of the remarkable tolerance of the tissues of the peritoneal cavity in wounds, that must have paralyzed the antiseptic surgeon of a few years ago. The case, more or less familiar to us all, of the man who attempted suicide by abdominal section in the pine woods of Michigan, is notable. But time requires that I must hasten, and one instance must suffice. A case in my practice occurred a few years ago of penetrating wound and recovery, where promptness in operating, not antiseptic surgery, saved the life of a little boy of this city. The case, as reported by me, has been published in several medical journals, and can be found in the transactions of the Ninth International Medical Congress, Vol 1, page 543. The central idea involved was, as above, that the surgical section of the Association should teach to operate in all cases of penetrating wounds, immediately.

You will, I hope, pardon me for having dwelt at some length upon the surgery of the cranium and abdomen; and yet much more needs to be said of our advanced knowledge of the tolerance of these parts, especially of the brain. But our recent text-books speak of these. So I will pass to one other subject as coming under my observation since the time of my attending lectures in 1861—the successful accomplishment of the ligation of the arteria innominata. The operation had been performed unsuccessfully by Valentine Mott, and others. Mott had left it as a legacy to the profession that it could be done successfully. Daniel Brainard, of Chicago, declared his faith in the judgment of Mott, and so it proved. In about the year 1863 or 1864, Dr. Smith, of New Orleans, performed the operation with success. The patient entirely recovered and lived for some years, but subsequently dying of disease, a post-mortem examination proved the accuracy of Dr. Smith's work, and the profoundness of an opinion based upon anatomical knowledge.

The processes of repair in the breach of continuity of bone substance was for many years a conjecture, more or less, and up to the time of 1876 and 1877 the theory, pro and con, as to the possibility of reunion in simple fractures without shortening, occupied a considerable part of the time of the deliberations of the Surgical Sections at the meetings of the American Medical Association. It had been long taught that no reformation of bone could obtain in cases of loss of substance where the periosteum was destroyed. I have always held to the contrary. As early as 1861, at the time of my attending lectures under Brainard's teaching, it was held that in the removal of diseased bone there could be new bone formed if the periosteum was saved. I argued that if bone would reform where the original periosteum was conserved, it would also be possible for it to reform without it, basing my opinion upon anatomical data, and I so declared myself at a meeting of the American Medical Association in Chicago, in 1877. It was published as a part of the discussion before the Surgical Section in the *Cincinnati Clinic* for June, I think, of that year. I then stated, and am still convinced of the fact, that bone will reform where the original track of the shaft is kept open, providing the surrounding soft parts are healthy, with regard to their usual blood supply, independent of periosteal conservation. Cell proliferation from the medullary substance will fill the space and calcification will, by natural habit, be supplied by the centering arteries. The periosteum having no osteoplastic *rôle* specific to its organization, constituted only of blood-vessels and connective tissue. I have removed as much as five inches of the tibia in one instance, and three or four inches in quite a number of cases, where there was no periosteum remaining, and have had perfect union with little, or no, shortening. As to what the opinion is now, or what work has been done in this line in the last ten years, I am not informed. I think antiseptic surgery has so completely absorbed the minds of surgeons and occupied the time of the deliberations of societies, that there has been no recent advanced thought in this most practical branch. Bone grafting held a prominent place in the favor of our journalistic literature a few years ago, but it has never had the backing of anatomical or physiological reason nor practical sense. As no notice appears, to my knowledge, in our recent text-books, I infer that it has been relegated to the antiquities of sheer nonsense and buncombe. Of skin grafting, I am happy to be able to testify to its physiological claims and practicable application. I have had some charming results, and observed others in the practice of other surgeons, that leave no doubt as to its having become a part of our practical business, in the great work of alleviating suffering and correcting deformities; and it is of recent date, having had its birth and growth within the time of my experience in practice.

Among the notable failures and absurdities, in claims to originality and advancement, I will call your attention to the hazardous practice of opening the knee joint and wiring the fragments of the patella. This was, I well remember, advertised as one of the triumphs of antiseptic surgery but a few years ago. It is an operation uncalled for and hazardous in the extreme, and universally I think, as it should be, discarded.

For the purpose of reaching the true Mecca of learning, let us turn back upon the slippery way for a little while, to look upon one of the oldest means, by far too little understood, even by those who practice it in surgery — bandaging. What does that practice involve as it is done in this day of antiseptic surgery — so-called? How many physicians recognize it as one of, if not the very most potent, means of antiseptic precautions and remedies? Has it ever been taught by the fathers and promoters of antiseptic surgery that it was the greatest of "microbe-killers" on earth? And yet I stand before you to-night to bear earnest and truthful testimony, that never in a four years' army surgical experience—a greater part of the time in hospital wards, where erysipelas was of common occurrence in gunshot wounds—never have I seen a case occur beneath a carefully applied bandage—a physiologically applied bandage—the bandage of even and easy support. And more than this, I have applied the roller bandage in many—in all—cases, when applicable, that I have

treated, both in military and civil practice, since 1863, and never saw a case resist such treatment for three days. The redness and swelling of the part subsides, and the patient's general condition improves, from the very first application. And therefore, from the antiseptic surgeon's standpoint, the roller bandage must necessarily be a microbe preventer and killer, worthy of no small amount of consideration. Dr. Dudley was probably the greatest advocate and most successful applier of the roller bandage. It has been said, though, of his students, that they did much harm. This was their fault, but no detraction from the principle involved.

Of all the appliances and devices in surgery the bandage is the most potent, and if I were reduced to the extremity of giving up all others or it, I should unhesitatingly select the bandage alone. With it I can give perfect anatomical adjustment in fractures of the extremities, and physiological rest to diseased structures; not only of the extremities, but of the abdomen and chest. Even in pneumonia the most charming results have been obtained in my practice; and in gunshot penetrating wounds of the lungs, life and comfort at once have come back to the sufferer. I have seen the rigid muscles of the face, expressive of pain, gradually relax as layer after layer was laid gently around the chest; and the patient, grateful for the sweet comfort of relief, would say, "Doctor, I feel so much better," and gently fall asleep, with rapid recovery. As to the answer of my belief here in the bacteria theory—"you must read your answer in the stars." There are no humbugs there.

I will call your attention to the repair of lost structure, the healing of wounds, for the most part open wounds. Union by the first intention, requires no discussion here, as the process is unattended by any pathological process, and the question as to antiseptic treatment is not involved. To typify the healing process with necessary treatment in one class of cases, I think, will be sufficient for them all.

Early in 1863 I began the treatment of stumps openly. After the limb had been amputated by the circular method, in the usual way, I bandage well down to the edge of the wound, in such a way as to give perfect support to all the tissues involved in the trauma, extending the bandage up on to the limb, so as to embrace all the muscles involved in the cut; thus giving uniform support and quiet to the tissues. This is rest without restraint, which absolutely fulfils all the indications in physiological surgery. Within from five to ten days the slough, consisting of blood and clot, wounded tissue from the knife, etc., is thrown off, and healthy granulations obtain. For the first few hours there is a free discharge of bloody serum; then a small quantity of pus, just sufficient to flood off the foreign substance. From this time on, there is absolutely no pus discharge, providing —as I am able to do—no dressing other than water comes in contact with the wound. I say no other than water; I do sometimes use a slightly stimulating wash consisting of nitric acid, one drachm to the quart of rain, or other distilled water. The hollow, cone-shaped wound enables me to do this easily by merely throwing a damp cloth over the mouth of the wound. Here is a brief description of what I know to be a novel method of procedure. What seems the most startling to the profession, I claim there is absolutely no pain, no discharge, during the healing, and that these stumps usually close by the process of granulation in two or three weeks, leaving only a small centrally depressed cicatrix, not larger than a five cent silver piece. Of over three hundred amputations so treated, not one has died from secondary causes. The bandage is seldom changed from the time of the operation and first dressing until the wound is healed. Others are applied over the first, so as to keep up the uniform support necessary in the contraction from shrinkage of the stump. This principle of permanent, undisturbed dressing, is as old as Larrey's practice. What is novel is the detail, I may say. The same processes and treatment are involved in the treatment of compound fractures, with loss of bone substance. The limb is maintained in its normal length, the track of the bone shaft left open to fill in by granulation.

Now can any of you see in this treatment Listerism? I have been told that the absolute drainage and consequent cleanliness of these open wounds is antiseptic surgery. This, truly, is evident from the results obtained. But is it Listerism—I being its originator? Frank Hamilton said to me that he told Lister that "we have a surgeon in Indiana whose wounds are antiseptic in their nature." At a meeting of the American Medical Association in Chicago in 1877 he (Hamilton) was acting as chairman of the Surgical Section, and after I had presented the case of a little negro boy, whose leg I had amputated five weeks before, bore testimony to having seen my cases in the army, and he stated that he had tested my method in Bellevue Hospital, and admitted that he was unable to account for the wonderful results.

Dr. Moore, of Rochester, says in an article read before the Section of Surgery, in the American Medical Association at a meeting in 1878, and published in the Transactions, entitled, "Prophylaxis of Septicæmia in Surgery": "This principle of outflow seems to me to be the explanation of the excellent results of the method of Prof. Link, of Indiana. The stump is the end of the limb, and the compression not only keeps the muscles quiet, but procures a constant outflow, and arrests septicæmia by arresting endosmosis. I have always employed his method since I heard his admirable paper at Louisville."

Again, in an address on surgery entitled, "A Sketch of the Progress of Surgery," delivered in the Section of Surgery in 1888, he says:

"Surgeons at different periods changed their methods, and open wounds were proclaimed as far more successful than those that were closed. But the term "open wound," as generally employed, is a misnomer. The wounded surfaces, it is true, are not pressed into contact, and provision is made for the drainage of the purulent matter, but these surfaces were still more or less in contact with each other. I do not hesitate to say that one of our own members, who made the first declaration of his method in the Surgical Section of this Association, has placed the question of the management of open wounds upon a perfect basis. It has usually been my custom to employ it since its announcement, and never with regret. There have been no failures, and little or no constitutional disturbances. I refer to Prof. Link's method, by which the bandage restraining the swelling causes the edge of the wound, which should be circular, to rise like an erectile tissue and stand up open to the air, thus making the only genuine air dressing that I know of."

I have never conceived for one moment that these

wounds with their soiled dressings were free from bacteria; believing, as I have from the first, that these microbes are only scavengers and common, or liable to exist, in all cases of death, decomposition and degeneracy of tissue. Consequently, I sent a sample of such bandages, removed from a compound fracture of the leg, of six weeks' standing, to Dr. Marcy, of Boston, for examination. The specimen was removed and at once placed in sealed bottles, some dry, others in alcohol and glycerine. The doctor wrote me—and I have the letter now before me—"These dressings literally swarm with bacteria."

The patient, Mr. Johnson, of Otter Creek township, suffered a compound fracture of the leg, middle and lower thirds, with the loss of the shaft of the tibia of 3½ inches. I dressed the wound, or limb, with bandages stayed with the shavings used in packing buckets and tubs for shipping. The wound was left open. Whisky dressing and hot water was the treatment from first to last. In fourteen weeks the wound had closed entirely and bony union obtained with little or no shortening. No unfavorable symptoms of septic poisoning or traumatic fever supervened. Yet, as Dr. Marcy reports, bacteria literally swarmed around the wound in the dressings. Is this the cleanliness of Listerism—the outpouring of Dr. Moore—or is it the physiological treatment of support, making the conditions antagonistic to diseased action—the shutting out of disease? As in the case of erysipelas, did the bandage act as a germicide?

The contagion of germicidal pathology, I think, reached its climax when the fellow (I do not remember his name or where I saw an account of it) claimed in an article published in one of our journals, that "where the skin is not broken, and diseased action of a septic character is taken on, the germs must necessarily have gotten in at the back door, as it were." Yet it seems that, where the physiological indications of support are met, the "germs" stay out, though the front door is left open.

In the early stages of the wound Dr. Moore's reasoning might hold good, as to the flooding off by the serous discharge, but in a little while, and before the slough is removed or any pus formed, there is no such outpouring; the wound is comparatively dry excepting as moistened from time to time by the damp cloth, or water that may be poured over it.

Dr. Moore said that my showing that wounds, so treated, do not discharge pus, completely revolutionizes former ideas as to the healing process. Looking into one of those rapidly healing wounds with its masses of granulation processes, rolling together like scrolls; cicatrization so rapid that the surface shrinks to nothing in a few days; one notices first, within a few hours after injury, the swelling out of medullary substance, like new granulation tissue—as Virchow claims it is—bone tissue held in reserve; then following in a few days the soft parts exterior to the bone; the whole blending, presents a pinkish hue, more or less varigated in tinting like a rosè bud; at places almost blood red; the new vessels easily discernible through the thin film of covering with an ordinary lense. One sees at once what Virchow, Cohnheim, Billroth and their contemporaries have taught of the identity of white corpuscle—the final cell—and their identity with the pus corpuscle; and in the cultivated mind's eye, easily learned by the every day student in what he may see through the lense of a microscope, in the web of a frog's foot, or the bat's wing—like diligent workers climbing the ladder to the top of the wall, or, like busy ants repairing the breach in their home—come crowding upon each other through the delicate avenues of capillary new formation, the white cell to be laid like the brick in the wall, with mortar; cells and inter-cellular substance, all dumped to the great builder, Nature; each selected to its part. The white blood corpuscle making new tissue, rapidly coming in excess, not needed here, in pus, as ordinarily in the battle of fighting some offending substance, lays itself into the wall in repair, locking firmly in each other's embrace; they form new tissue, contracting as they solidify into the connective. This process being even, the surface contracts alike; not only puckering the edge of the skin towards the bone, but depressing the center, leaving the cicatrix well embanked around with original skin. We can have no tender stumps.

The thought that lies nearest all this is the part taken by the bandage—the only seemingly universal auxillary, as all other treatment is incident to necessities as they may arise. First the stiffening of the skin covering; second, rest, as above; third, the uniform pressure that it exerts upon every vessel of the pathological tissue, preventing blood stasis (and venous absorption)—no swelling—no pain. The swelling is the result of congestion and exudate; pain of inflammation, the result of nerve tension or stretching in the tissues from swelling. The pressure exerted by the bandage, together with the free exit of serum, prevents congestion and infiltration. Later comes the other stage: inflammation cut short by other conditions, and only obtaining, in so far as a kind of inflammation process is necessary to the healing of the wound, not necessarily sufficient to result in suppuration. In these cases the white blood corpuscles are not called upon to act as pus to flood off the offending substance and are, therefore, utilized as tissue makers.

The ultimation of surgery is not in the size of the Catlin knife, or the sharpness of the scalpel in dexterous fingers. The transcendentalism of surgical science is the footing on the pinnacle of the spire, that has its foundation in bone, nerve and artery, finished in capillary cells, molecule and protoplasm; the skilled hand and trained mind reaching out into the infinite of these materialisms.

In conclusion upon this subject, I wish to say that the roller bandage, slightly enforced, meets all the indications in the treatment of fractures of the extremities; putting the muscle to sleep, as it were; with flexion of the lower extremities, the limb rotated outward and laid level upon the bed; we have a perfect adjustment of the bone, with no spasms of the muscles or tendency to displacement; the patient rests easy and comfortable, bacteriology to the contrary notwithstanding.

The rubber bandage, as usurped by Martin, on its elaboration to the use of treatment of varicose veins and synovitis, is a little better than none, and only advantageous to the laity in its easy application by them.

The flannel bandage meets the true scientific requirements of physiological action, and is to be much preferred by the skilled in the use of scientific means for the relief of all chronic troubles.

It is a common principle in nature to resist any obstacles to its tendencies, even unhealthy ones. Apply the bandage for the above chronic condition,

and the first effect is irritation and a tendency to increased congestion. But nature, finding the environments unsurmountable, takes the only remaining course for relief; diminished congestion, and absorption, obtain, until the shrinkage leaves the parts loose and free. Consequently the rubber bandage is wrong, and Martin admitted that in arthritis it should not be used. Nature here finds no point of rest in the following up of the pressure of the elastic bandage; the irritation is continuous. But with the fixed bandage of flannel or old, well worn domestic, it is different. The thought that suggests itself to the "thinking"—which we seldom do until the necessity to account for facts pushes us to it—that the more seldom the dressings are changed the more rapid the recovery. So Larrey taught nearly a hundred years ago, and we, to-day, are forced to go back and admit a homicide and burial of one of our nearest and dearest, though commonplace friends, in the neglect in ambition of seeking the mysterious. Thus we are constantly stumbling over practical things lying around and near us in the blindness of egotistical-far-seeing-ambition. There is no more notable instance of this, than in the case of chloroform and sulphuric ether as anæsthetics, so called. Alcohol is to-day their superior, having this true principle more fully marked, as its very first effect is anæsthetic when given in large doses, and it meets all the practical necessities in far the greater proportion of capital operations, as I have frequently demonstrated.

Anæsthesia can be produced by the rapid administration of whiskey in less than one hour, and with far less general physiological disturbance than by chloroform or ether. The most serious disturbance is that probably of congestion or hyperæmia of the medulla oblongata; and this is counteracted by the loss of blood, mental impression and nerve shock incidental to all surgical operations. Whilst whiskey increases the blood supply to the base of the brain, chloroform diminishes it. The two used in conjunction—the one by the mouth, the other by inhalation—act in harmony anæsthetically; the one counteracting the unhealthy or dangerous tendency of the other, they should be used jointly. But with choice between the two—the one to the exclusion of the other—I should unhesitatingly select alcohol, as I am convinced that anæsthesia can be made complete, with less than one tenth part the death rate of volatile anæsthesia.

Therefore, I am in the habit of administering frequent doses of whiskey followed by small quantities of chloroform. A few inspirations is sufficient to quiet the patient. After which a prolonged operation can be practiced, the physiological conditions remaining through the severe trials of a capital operation nearly, to all appearances, normal. The florid or normal color of the surface, especially the countenance, respiration, heart-beat, pulse-wave, all leading to a feeling of assurance of minimum danger from anæsthetic causes.

LATER—November, 1892.—H. C. Wood's tests as reported to the Int. Med. Congress at Berlin, 1890, were correctly made and deduction proper. But the administration of alcohol hypodermically after profound anæsthesia by chloroform with failure to reinstate is liable to be misleading. Alcohol will prevent, under its primary influence, shock, mental depression and collapse, but will not restore from them, if at all profound.

SPECIFICS FOR THE CURE OF INEBRIETY.

BY T. D CROTHERS, M.D.,
OF HARTFORD, CONN.

When any great truth begins to receive public recognition it is always first welcomed by the credulous and visionary enthusiast, who surrounds it with the most extravagant expectations. This brings out the charlatan and empiric who studies to turn all such facts and conditions to his own personal profit. In this way the credulity of the one and the charlatanism of the other envelop the truth with a confusion and mystery that often conceal it for a long time. Only the student and the scientist realize that behind this glamor and illusion there is a uniform evolutionary movement along different lines from that suggested to the popular mind.

The growth of the truth is through separate periods and stages. The first stage is that of indifference, neglect, and denial. Then follows the credulous period, in which the truth is partially recognized and accepted, with extravagant conceptions, associated with wild empirical efforts to incorporate it into practical life. Finally, it is fully understood, studied, and accepted, and becomes a part of the world's great possessions. This is the natural history of every new fact of science and every new discovery concerning the evolution of humanity. Often these stages extend over long periods of time and are unrecognized except by a few persons; or they follow each other rapidly, but always along the same lines.

The dawning truth that the drink evil is a disease, and curable as other diseases are, has passed the first period of neglect, indifference, and denial, and has come to the second stage of partial recognition and acceptance. The same army of the credulous, the enthusiasts, and marvel-hunters are welcoming this fact, and the same wild expectations of its practical possibilities fill the air. This is followed by the same old charlatanism and empiric efforts to make personal profit out of these truths by the use of the same old quackish means and methods.

These efforts are prominent by the same assumption of superior knowledge of discovery of new facts, of new remedies, and new methods, all of which are concealed. Then follow claims of extraordinary cures under extraordinary conditions, the proof of which depends alone on the statements of the cured.

Then comes the old story of persecution by physicians and scientists, and of posing as martyrs, public benefactors, and pioneer discoverers, with indirect appeals for sympathy from the broad and liberal minded. Back of all this is a pecuniary field actively tilled which yields rich harvests, and altogether it is the same old familiar history of empiricism, which is always to be found on the advancing frontiers of science. Within two years a large number of charlatans have appeared, claiming to have found remedies and specifics for the certain and permanent cure of the drink disease. A great variety of means and drugs are offered, each one claiming to be superior to all others. Recently one of these empiric specific cures has led all the others in boldness and prominence. Starting from an obscure Western village, it has spread out into many branches, all organized and conducted on one general plan, and federated together. Physicians have been enlisted to conduct each branch, companies have been organized, houses hired, and elaborated arrangements

made for the work. Special papers have been established to defend its interests, and the pulpit and press have indorsed and freely praised these efforts. Every possible avenue to attract public attention has been industriously cultivated to keep the subject before the people.

Large numbers of persons who claim to be cured have organized into clubs, and display hysterical enthusiasm to prove the reality of their cure and the greatness of the projector.

It is assumed that the inventor of this specific was the first to urge the theory of disease in modern times; also that he has made a great discovery of a new remedy the nature of which he carefully conceals from the rest of the world. The most wonderful and complete cures of the most incurable cases are accomplished in two or three weeks on some unknown physiological principle. These assertions are sustained by certificates of clergymen, reformed men, and others, and are accepted as facts without question or other evidence. Dogmatic statements and bold assertions, coupled with savage criticism of those who dare to doubt, together with half-truths and wild theories, mark all the literature of this specific. The commercial side of this remedy is equally startling and Napoleonic as a business success. It is a curious fact that this particular cure is very closely followed in all its details and claims by a number of imitators, who have made equally wonderful discoveries in precisely the same way, but all are concealed for the same pretended reasons. It is equally curious to note the absence of novelty and originality of methods compared with the means and efforts used to make popular and create a sale for most of the proprietary articles on the market to-day. All these specifics for the cure of inebriety are without any practical interest except as phases of the psychology of the drink disease. It is very evident that they could not attract attention on their merits, and the means and appliances used to bring them into notice. Their existence depends on a psychological subsoil, which would favor the growth and culture of any remedy involved in mystery, and promising marvelous cures in a brief time. This subsoil is simply the expectant credulity of a large number of persons, who recognize the possibility of disease in inebriety. Without this all specifics, no matter how wisely and shrewdly presented, would fail. The conditions are all ripe for such empiricism, and its growth, life, and death are governed by causes unknown to and beyond the control of its boastful authors.

Every temperance revival movement depends on some psychological subsoil of expectant credulity, and is followed by the same dogmatic empiricism and the same wonderful cures, and, hysterical confidence of permanent results. Certificates of cure, and enthusiastic praise of means and methods of far greater magnitude than that which follows any specifics, could be gathered and noted after every temperance revival.

The specific cures of inebriety to-day have appeared many times before in the history of the past. Often the empiricism associated with it has been entirely moral and ethical, and at other times it has been pecuniary and selfish. The old Washingtonian movement was a good illustration of a great specific cure, bound up with a great tide of moral empiricism, which for years created intense interest.

The presidential campaign of 1840 was notorious for the excessive use of hard cider, whisky, and rum. Every political meeting was marked by the free use of these spirits, and as the excitement of the struggle increased, temperance men drank, moderate drinkers became drunk and delirious, and never before or since has the excitement of politics been so intimately associated with inebriety in all its forms.

At the close of the campaign it was estimated that over half a million voters were practically inebriates, or had been repeatedly intoxicated during the excitement and excesses of the campaign.

Newspapers and court records showed clearly that a high tidal wave of drunkeness and moderate drinking existed at that period. Then followed the inevitable reaction, and at this moment the Washingtonians appeared. A few months before, a small drinking club in Baltimore changed to a temperance society, and called themselves Washingtonians. Its members were reformed men, and its leader, John Hawkins, was an enthusiastic, pasionate orator, who urged the pledge as a remedy for drunkenness with intense earnestness. The excitement of the political campaign and its drink excesses had prepared the public mind for this great emotional remedy—the pledge. John Hawkins' infectious earnestness animated his followers, and roused up an army of lecturers which scattered to every town and hamlet all over the country. The campaign excitement of 1840 appeared again in a great temperance reform wave, which steadily grew in number and enthusiasm up to 1847, when a high tidal point was reached and reaction begun. Over a million persons signed the pledge, and the evils of drinking and alcohol were discussed in almost every neighborhood in the country. Never before had any reform movement been prosecuted with such terrible earnestness and contagious enthusiasm. All selfish motives and personal interests seemed to disappear in the one great purpose to pledge the victim and inspire him to avoid spirits and lead a temperate life. The spirit of the old crusaders seemed to have reappeared again. This was literally a psychological storm-wave, the reaction in part of the campaign of 1840, and the outgrowth of obscure psychological conditions, which had been prepared for a long time before. It crossed the continent and was felt everywhere, and a few years later was only known in the history of the past. While a number of inebriates were restored, its real work and value were in a different direction, not yet fully realized. It seemed to be a great force that fused and mobilized a tide of oncoming truth, and was literally a forerunner, indicating new and clearer conceptions of inebriety. It not only broke up old theories, but opened up new ranges of work, and gave glimpses of more effectual methods for cure.

The first inebriate asylum in the world grew out of this movement, and all the various temperance organizations date from the same source. Even the Prohibition party is the outgrowth of this reform-wave.

It was the first great psychological evolution of the drink question, giving an impetus and inspiration to its study, above all moral and political considerations. It was also a great empirical epidemic which assumed that the drink evil was the result of a feeble will, the remedy for which was the pledge, supported by personal sympathy in organized societies

It was a moral and ethical empiricism, based on the purest and highest motives; had it been founded on truth, would have lived as a great power in the upward movement of the race. In this connection it will be of interest to trace another great wave of empiricism, that created interest for a time. Unlike the Washingtonians, it was thoroughly mercenary, and, like the present specifics for inebriety, it was born in mystery and sustained by credulity and dogmatism.

The experiments of Galvani in 1785, attracted great attention. The most extravagant expectation of the practical galvanism in curing disease may gradually spread among non-experts all over the scientific world. Various empirics appeared claiming remarkable results based on this new force. Finally, in 1796, Dr. Perkins, of Connecticut, announced that he had discovered two metals which, combined in a secret way, possessed marvelous powers of galvanism, which he called tractors, or pullers-out of disease. These tractors resembled a piece of gold and silver fitted together, about four inches long, and were used by being moved up and down over the part affected, to draw out the disease and restore the vital forces. Almost every disorder known was cured or relieved by this means. The discoverer challenged the world of science everywhere, and invited criticism, and pointed to the persons cured for irrefutable evidence. The psychological soil was prepared, and the army of credulous enthusiasts were all ready to welcome him. In two years these tractors attained great popularity in this country. They were literally recommended and indorsed by the faculties of the three medical colleges, and vast numbers of clergymen, members of Congress, and public officials. A special patent was issued, and signed by George Washington, as a slight token of the great service the inventor had rendered the world. Pamphlets, sermons, lectures, papers, and even books were written and scattered everywhere, giving the theories and results following the use of these tractors. In 1798 Perkins went to London. His boldness and dogmatism immediately commanded popularity. After a time a hospital was established, called the Perkinson Institute, offered by the nobility, with Lord Revois as president. Large sums of money were given for the treatment of the poor by this method. Free dispensaries were opened, and trained assistants used these tractors for all cases, with boasted success. Lectures were given on the philosophy of this method, and students were instructed and sent out to open branch institutes. The rich purchased these tractors and became their own doctors, and the poor were obliged to accept treatment from others. With empiric shrewdness, certificates of cure were gathered, which exceeded ten thousand in number, and were signed by princes, ministers of state, bishops, clergymen, professors, physicians, and wealthy laymen. The inventor was recognized as a great public benefactor and pioneer, also one of the few mortals who would live down the ages. Perkinsism seemed to have won a place in the scientific history of the world. By and by this gilded cloud of popularity burst, and the charm was dissolved. Two physicians made tractors of wood and sold them as the orginal, producing the same results and the same crop of certificates of cure. After making a respectable sum of money, they published their experience, together with the thanks and public prayers for the great blessing conferred on the world by these means. Like the "South Sea bubble," Perkinsism dissolved and was no more. The branch institutes for treatment by the tractors closed for want of patients, and the tractors disappeared. Behind all this tremendous enthusiasm for the good of science and humanity appeared a commercial spirit that was startling.

These tractors were claimed to be gold and silver, and sold at from ten to twenty dollars each. In reality they were made of brass and polished steel, at a cost of about twelve cents each, in an obscure Connecticut village, from which they were shipped to the inventor, who sent them all over the world. Of course, Perkins made a fortune, which compensated in a measure for his sudden fall from greatness.

While this was a great empirical epidemic with a mercenary object, based on a few half-defined truths, it materially furthered the growth and evolution of this subject. Many of the wild theories which gathered about Perkinsism suggested clearer conceptions to later observers. Like the specific inebriety epidemic, it began as an assumed discovery of some new power, claimed from metal (not used), with some new physiological action by some new process, enveloped in mystery and only known to the discoverer. The tractors were patented, and only made by Perkins, and the certificates and statements of those cured furnished all the evidence. Literally, the effects were entirely mental, depending on the credulity and expectancy of those who claimed to be helped.

The present epidemic wave for the cure of inebriety is hardly up to the average of former empiric efforts in adroit manipulation of the credulous public.

The successful charlatan of modern times has always exhibited some psychological skill in the display of assumed truth and the concealment of his real motives. In these inebriety cures there is a coarseness of methods, with brazen assumptions and display of pecuniary motives, that quickly repel all except the unthinking. The circulars, statements, and appeals to the public are overdone, and sadly lacking in psychological skill. A certain crankiness, with strange combinations of rashness and caution, stupidity and cunning, suggests that inebriate intellects are the guiding spirits in the management of these cures.

On the other hand, the very spirit and hurry of the movement suggests a full recognition of the brevity of the work and the need of active labor before the "night cometh when no man can work." In this the highest commercial and psychological skill appears. Dependence for popularity of the cure on the emotional enthusiasm of reformed inebriates also suggests a short life and early oblivion, of which every temperance and church movement for this end furnishes many illustrations.

There can be no doubt of the fact that a certain number of inebriates are restored by each and all these various methods of cure, and a certain other number, always in the great majority, are made worse and more incurable and degenerate by the failure of such means. But, above the mere curing of a certain number of cases, a great psychological movement is stimulated, and a wider conception of the evil follows of permanent value. The inebriety specifics are epidemics of empiricism that will pass away soon, but they will rouse public sentiment and

bring out the facts more prominently as to the disease of inebriety and its curability. This second stage of this truth resembles the "squatter period" of every new Territory—a stage of occupation by squatters, fortune-hunters, and irregulars of every description, who rouse great expectations, build canvass towns, making a show of permanent settlement, and attract crowds of credulous followers, only to prey on them. These persons disappear when the real settlers come. They never develop any lands or discover any new resources, but prepare the way and concentrate public attention for the final occupation. The specific vaunter of to-day is the squatter settler, who will soon disappear, and be followed by the real settler and the scientists.

Inebriety, its causes and possible remedies, are a vast, unknown territory, the boundary lines of which have been scarcely crossed. The facts are so numerous and complex, and governed by conditions that are so largely unknown, that dogmatism is ignorance and positive assertions childishness.

The recognition of disease is only recently confirmed by the accumulation of scientific facts, although asserted and defended for a thousand years as a theory. The realm of causation is still invested with moral theories, and moral remedies have been used in the same way for a thousand years. While science has pointed out a few facts and possible laws of causation, and indicated certain general lines of treatment, it gives no support to the possibility of any specific remedy that will act on an unknown condition in some unknown way. Inebriety is literally an insanity of the border-line type, and a general condition of central brain defect, unknown, and clearly beyond the power of any combination of drugs. To the scientists, all this confusion of theory and empiricism hides the real movement, and is in itself unmistakable evidence that somewhere in the future the entire subject will be known, not as a statement or theory, but as scientific truths established on scientific evidence beyond all doubt.

The specific epidemic delusions for the cure of inebriety will quickly disappear, as others have done before, and its real value to science and the world will appear from future psychological studies.

ALCOHOLIC INSANITY AS ILLUSTRATED BY THE CASE OF JOHN REDMOND.

Read before the Chicago Academy of Medicine, October, 1892.

BY HAROLD N. MOYER, M.D.,

ADJUNCT PROFESSOR OF MEDICINE, RUSH MEDICAL COLLEGE; NEUROLOGIST TO THE CENTRAL FREE DISPENSARY.

An etiological classification of insanity has proved quite as fallacious as in other departments of medicine. While at first it appeals to the reason as an admirable means of dividing diseases, and as often giving a hint of their chief indications for treatment, in actual practice it results in grouping together incongruous and widely separated conditions. It is needless to refer at this time to the contentions and useless polemicizing that has been indulged in the discussion of disorders laboring under an etiological terminology. We need mention but one, spinal concussion. The same difficulty attaches to the term alcoholic insanity; by some it is used to denote any mental change due to alcohol, by others it is restricted to the more permanent mental states resulting from the prolonged ingestion of alcohol. In the same loose manner various other terms have been employed to designate different phases of the effects of alcohol upon the brain, such as acute alcoholism, delirium tremens, chronic alcoholism, mania à potu, dipsomania, etc. While these terms are descriptive of fairly well marked clinical groups, yet they have been so carelessly applied by medical writers that it is impossible in many cases to accurately define them.

Leaving out of consideration the more evanescent effect of acute alcoholic intoxication, we begin the study of the action of the prolonged ingestion of alcohol upon the mind. It is apparent from even superficial observation that the chronic inebriate is in an abnormal mental condition. If the grosser phenomena of insanity, such as delusion and hallucination, are not present, there is the enfeeblement of the will, impairment of memory, perversion of the moral sense and a general letting down of the mental tone. This condition is, however, not insanity in the strict sense of the term. In this mental condition of the inebriate, which is but an expression of the nutritional disturbance in the brain, and in which all the other organs share, we have a fruitful field for the development of the psychoses. It is to be remembered that alcohol may stand as a predisposing or exciting factor in the development of several forms of insanity. Thus it may initiate an attack of melancholia or mania, and the course, duration and termination of these disorders will not be different from that observed in cases presenting the most diverse etiology. These should not be classed under the head of alcoholic insanity. The importance of alcohol in the production of paretic dementia is admitted by all, and yet the clinical history and termination of these cases is not different from those in which there was entire freedom from the alcohol habit.

It will be seen from the foregoing that many, perhaps the majority, of all patients tracing their derangement to the misuse of spirits, do not suffer from alcoholic insanity. It may well be asked wherein is the justification of the term. Is there a well marked psychosis having its origin in the prolonged use of alcohol that can be clinically differentiated from other groups, and presenting sufficiently marked characteristics to enable us to affirm a probable alcoholic etiology in cases where the previous history is unknown? This question can, we think, be answered affirmatively.

As Spitzka so aptly puts it, the phenomena of alcoholic insanity develop upon the peculiar mental condition of the inebriate, much as hysterical and epileptic insanity is superadded to the mental conditions always found in these neuroses. The early stages of alcoholic insanity are marked by hallucinations, generally of vision, in this we note a close resemblance to the acute alcoholic delirium. These aberrations in the sensory sphere soon give rise to persecutory delusions of a fixed character. They usually relate to the sexual organs, the sexual relations and to poisoning. So constant is this association of delusions in this form of insanity that Spitzka says where this relation is found it comes as near demonstrating the existence of alcoholic insanity as any one group of symptoms in mental pathology can prove anything. Alcoholic insanity has a closer resemblance to paranoia or monomania than to any other psychosis, as is shown by the chronic and persistent

nature of the trouble, the fixedness of the delusions, their persecutory character and absence of emotional disturbance. The resemblance of paranoia and alcoholic insanity is clinical only and relates to the more apparent symptoms; pathologically it is closely allied to paretic dementia as essentially a degenerating psychosis. While the delusions are fixed they are not logically supported as in paranoia, they lack the systematized and organized quality found in the latter disease. Krafft-Ebing pointed out that the delusions of alcoholic insanity take their origin in preëxisting hallucinations while in paranoia this is never the case. Another differential point that we have noted in our cases is that the paranoiac correlates the hallucination with his delusions. That is the delusion furnishes an explanation for the hallucination. This we think is the foundation of the fact noted by Spitzka that the acts of insane inebriates are not consistently regulated by their delusions. The emotions are but little involved. What there is is usually shown by depression that can be readily explained by the distressing hallucinations and delusions of persecution. The prognosis is always grave, the patients even when confined in an asylum and denied all alcohol, invariably progressing toward dementia, that does not differ from the terminal states of other psychoses.

With these preliminary considerations we will pass directly to a consideration of the case of John Redmond. He was admitted to the Eastern Insane Hospital Jan. 11, 1889. The history which accompanied him at that time stated that he was 35 years old and that there was no special neurotic heredity, that his mother had lived to be 70 and his father 85 years of age. That he had used alcohol and tobacco excessively for the past two years, ever since the abduction of one of his children. There is evidence to the effect that he had been a free user of liquor long before the time named in this history. The duration of the disease was given as six months. It was first shown by irritability which soon passed to delusions of persecution, marital infidelity and poisoning. He was said in the commitment to be homicidal and that he carried a revolver, on one occasion firing through the floor. On January 17, it is noted that he was improving though his face was flushed and he was easily excited, particularly when discussing the subject of his detention in the hospital, which he regarded as unjust and as belonging to the same class of persecution to which he had been subjected at home, when tricks had been played on him with telephones, and by suspending his bed with ropes and swinging it around rapidly. February 1, he conducted himself rationally though his earlier delusions persisted. February 8, he was sent home with an attendant for a day. April 30, he was discharged improved though it was noted that his delusions, while less insistent, were still present. After his return he resumed to some extent his drinking habits, with the effect of accentuating his delusions though it is not certain that at any time he was as bad as when he was sent to the asylum.

One day he sent a message for Dr. F. M. Wilder, who had been his family physician, to call and see one of his children; he met the doctor at the door, fired several shots at him, killing him instantly. Some months after this, just preceding his trial, the writer examined Redmond in the county jail. At that time he was in fair physical condition, conversation was coherent, and on most topics there did not seem to be any special impairment of the mental faculties. Serious lacunæ were noted in the memory. There was decided uncertainty in the movements the hands which at times would suggest tremor. As soon as the killing and his marital relations was broached he immediately became excited, walked nervously up and down the room, and started in with a tirade of abuse against Dr. Wilder, stating that the doctor had attempted to destroy his home and debauch his wife. That on one occasion Wilder had given him medicine that had caused his head to burst open, and more than a quart of water ran out. While he was in this condition the doctor attempted to persuade Mrs. Redmond to retire alone with him to an adjoining room, saying "do not stay with this dead man," or "he will soon be dead, let him alone."

It will be seen from the foregoing history that Redmond was continuously insane from about July, 1888, to the time of his trial, a period of four years. During all that time he had persistent delusions of persecution, of marital infidelity and of poisoning, and that these directly related to Dr. Wilder. They were sufficient to establish clearly the diagnosis of alcoholic insanity.

The jury brought in a verdict of guilty and fixed the penalty at imprisonment for life.

The law regarding the relation of alcoholism to crime is by no means fixed. In a general way it may be stated that drunkenness is not considered as an excuse for crime, and that intoxication cannot be pleaded in mitigation of punishment, excepting in those cases in which the degree of the crime is affected by motive. In the cases where the crime is committed while the accused is laboring under delirium tremens, or the more evanescent mental disturbances of acute alcoholism, it is held that he is responsible and punishable. It is manifest that under such a rule the intoxication is punished, and not the crime for which the person is upon trial. A third condition which is almost universally admitted to absolve from responsibilty is when the chronic ingestion of alcohol has resulted in the development of insanity of a permanent type. These cases are to be judged the same as insanity having its origin in other causes, than the abuse of alcohol. It is apparent that Redmond comes under this latter class. The theory adopted by the prosecution and supported by expert testimony was that he had so far recovered that he was able to abstain from the use of liquor, and so the crime being the outgrowth of an acute intoxication, would come under the second class. This view does not appear tenable to us as it leaves out the dominating effect of chronic mental disease and assumes on the part of these patients a degree of self control, often not possessed by persons unaffected by mental disease. Such a partial view does not take into account the fact that the delusion regarding Dr. Wilder developed more than two years before the killing, and there is no evidence to show that there had been anything more than a partial restoration of health, in that time. My view is that the crime was the outgrowth of a delusion, having its origin in a diseased condition of the brain, for which the accused was not criminally responsible. In a measure, this view was reflected in the verdict of the jury, as had they fully believed in the sanity of Redmond they would have sentenced him to death as the crime was clearly premeditated.

In conclusion, I fear that the medico-legal relations of crime growing out of alcoholic intoxication will ever remain an obscure chapter, in jurisprudence. On the one hand will be the fear that too liberal rulings will result in the escape of great criminals, while on the other hand, the misfortunes of the alcoholic lunatic will be accounted in some degree at least, of his own making. Perhaps some of these difficulties can be met by needed modifications of our statutes by which dangerous and incurable criminal lunatics may be incarcerated for life in an asylum for insane criminals.

834 Chicago Opera House.

SOCIETY PROCEEDINGS.

The Medico-Legal Society of Chicago.

Regular Meeting, December 3, 1892.

JUDGE OLIVER H. HORTON, PRESIDENT.

E. J. Doering, M.D., President Chicago Gynecological Society, read the following paper

THE BASTARDY LAW OF ILLINOIS.

Mr. President, Ladies and Gentlemen:—The subject to be briefly submitted to your consideration to-night is strictly speaking, a legal rather than a medico-legal topic. On the other hand, it is a subject in which we, as physicians, are more interested than any other class of society, for it falls to our lot to witness the mental suffering, the physical agony of the unfortunate mother, it is our duty to usher into the world the most unwelcome of all visitors—the bastard child. On the statute books of the State of Illinois you will find the following laws relating to bastardy, which have been in force for 20 years, since July 1, 1872:

After the usual phraseology relating to complaints, warrants, trial, etc., we read as follows in paragraph viii: In case the issue be found against the defendant or reputed father, or whenever he shall, in open court have confessed, the truth of the order and judgment of the court to pay a sum of money not exceeding one hundred dollars for the first year after the birth of such child, and a sum not exceeding fifty dollars yearly for nine years succeeding said first year, for the support, maintenance and education of such child, and shall moreover be adjudged to pay all the costs of the prosecution, for which cost execution shall issue as in other cases. And the said reputed father shall be required by said Court to give bond with sufficient security to be approved by the judge of said Court, for the payment of such sum of money as shall be ordered by said court, as aforesaid, which said bond shall be made payable to the People of the State of Illinois, and conditioned for the due and faithful payment of said yearly sum, in equal quarterly installments, and the clerk of said Court, which bond shall be filed and preserved by the clerk of said Court. Paragraph xv, provides: If the mother of any bastard child and the reputed father, shall at any time after its birth, intermarry, the said child shall in all respects, be deemed and held ligitimate, and the bond aforesaid be void. Paragraph xvi further provides: No prosecution under this Act shall be brought after two years from the birth of the bastard child.

Now first of all I desire you to notice that process under this Act is a *civil*, not a criminal proceeding. It means in other words simply a civil suit for damages to support the child, without in the least reflecting on the defendant in any manner whatsoever. This is all the redress the law permits to the unfortunate plaintiff. And this is called justice.

Now I presume no one will seriously question the statement that in ninety-nine if not one hundred per cent. of all cases of bastardy, the male has been the aggressive party, nor that the vast majority of cases of this kind are simply cases of seduction under the verbal promise of marriage. But the State of Illinois says officially to the male citizens, such an offense is not criminal and places the damages for degrading womanhood, for cursing innocent childhood, for producing untold misery, anguish and torment at the uniform price of five hundred and fifty dollars. On the other hand when a wretched woman, driven to despair by the outrage committed on her, kills her seducer and father of her unborn child, she is promptly acquitted by the uniform verdict of the jury "not guilty." What inconsistency! Murder justified when the State of Illinois says a fine of five hundred and fifty dollars would have been ample punishment!

Such infamous perversion of justice as expressed by the bastardy law of this State, bears of course ligetimate fruit. Under its fostering care the number of illegitimate births are constantly increasing, the business of the abortionist becoming more flourishing, houses of prostitution filled with the victims of the seducer, all, thanks to their partner in crime, the State of Illinois.

Now Mr. President, we have in this Society repeatedly expressed our indignation at the laws relating to the insane, would it not be well to pay some attention to the insane laws relating to the same? Now consider this Bastardy-act of Illinois. If you hold that the woman in question has forfeited all claims, no matter how her ruin has been accomplished, by what authority do you condemn her innocent offspring? Is it just, is it humane, is it Christian to curse the whole life of an innocent being, by damning it from birth until death, by stamping on its brow indelibly the word "bastard?" If you strangle such an infant at birth, you are guilty of murder, but strangling it would be an act of mercy, rather than the existence to which you are pleased to condemn it. The statutes provide that if any time after its birth the father marry the mother, said child becomes ligitimate. Is it right, is it just to leave to the choice of the guilty parent the happiness or wretchedness of two immortal lives? Leave it to the seducer's *choice* whether to condemn a suffering broken-hearted mother to be a social outcast, her innocent offspring to be a bastard? Do you call this justice? Mr. President, I care not for ancient, I care not for modern law, I care not for precedents in such matters I recognize a higher—a moral law—and I hold sir, that cohabitation with resulting pregnancy constitutes marriage in its truest sense, and justice is but a mockery, until the statutes declare it also to be such in a legal sense. Not until then sir, has the State done its first duty—justice to all—justice to the man, justice to the woman, justice to the child—that is equality—now it is tyranny.

If you raise the objection that the parent might be already a married man, I answer, apply to him the criminal code relating to bigamy and permit his victim to assume his name, and constitute the child an heir at law. Vice versa, if the mother be already married, punish *her* for bigamy and permit the child to assume the name of its father with all the rights pertaining thereto.

Where the question of parentage cannot be decided as in the case of a prostitute, often such child should be a ward of the State, whose duty it should be to provide for its adoption among the farming population with a suitable compensation to its foster parents. Minors should be treated as adults. It would teach the parents the necessity to impress upon their children when arriving at the proper age, the sacredness of the marital relations, instead of leaving them as now to get all information on sexual matters from lewd

books and evil companions. Finally if you raise the objection that rich men and rich men's sons might fall prey to designing women, I ask what of it? Think of the millions of poor women who have been made the victims of designing men and ever will be! I sincerely hope that some of the legal members of this Society will become sufficiently interested in this matter to prepare a Bill in accordance with the views so briefly uttered, and I will gladly attend to the details necessary to submit it to the Legislature at the coming session. While radical action may not be hoped for till women have a right to vote, it is still within the range of possibilities to change the Bastardy act into a criminal procedure, and one important advance towards justice will have been gained.

Our social fabric is full of imperfections, crying evils abound everywhere which sooner or later may produce an upheaval of stupendous proportions, but to mind the greatest outrage of all committed by legal sanction, is the crushing of two lives, the damning of two souls for life and of eternity, the violation of all divine law—the Bastardy act of Illinois.

Discussion.

Dr. Sarah Hackett Stevenson.—There are only a few things I have to say in regard to this law and they have already been well said by the writer of the paper. As has been stated, the complaint of bastardy is not a criminal charge, it is quasi-criminal and quasi-civil. Upon investigation I find it is a county court proceeding, not considered in the light of redressing a wrong to the mother, but is designed only to protect the county from the support of paupers. I think this is a point we should consider in our discussion. The penalty upon a conviction on this charge is "to pay a sum of money not exceeding one hundred dollars for the first year and not to exceed fifty dollars yearly for the nine years succeeding, for the support, maintenance and education of such child, and he shall pay the costs of prosecution." I call your attention to the fact that no account is taken of compensation to the mother in this proceeding, although there is an alternative; if the man has property she has a remedy in a civil suit for damagss. It is my opinion that the law is entirely inadequate, there is no good reason why judgment in such cases should not be rendered for double and treble the sum now allowed. The man who is father of an illegitimate child should pay as much, if not more for its support, than the father of a legitimate child is obliged to pay for the support of his child. The illegitimate child certainly needs more protection from the law than the child born into a family with family protection; if any difference is made it should be made in favor of the unprotected innocent child, the victim. And furthermore, there should be an additional penalty, what is known as "exemplary damages" to the mother. Not a mere reimbursement of pecuniary loss, but a compensation for the injuries sustained. These are the points I should make in a discussion of this subject, viz: That it is not a criminal proceeding; and the damages are inadequate. They are simply what it would cost the county to maintain the child. We know a mother, with a child must be at a greater expense in taking care of that child, than the county could possibly be. In the first place her own earning capacity is almost ruined, and the cost which falls upon her in its maintenance is much more than the cost to the county in taking care of that child should it become a pauper. As I understand it, the monetary basis is upon the question of the cost to the county in taking care of this child if it becomes a pauper. But if we encourage the mother to take care of her child, which all people of good morals are endeavoring to do, the cost of maintaining it is much more than it would be to the county, because the county places these children in institutions where they can be taken care of at the lowest possible rate.

Dr. C. D. Wescott.—It seems to me that no argument is necessary to make us all feel as Dr. Doering and Dr. Stevenson do in this matter. A mere statement of the law is sufficient to convince us that it is not only inadequate, but wrong, that the woman is not considered at all. The best point in the doctor's paper, however, is that the act which has given origin to new life should constitute legal marriage, as it certainly does actual marriage. The law should make every man feel that if he is an actual father, he owes it both to the mother and to the child to be as much a father to that child as the mother will allow him. If she does not want to live with the man who has deceived and wronged her, she certainly has a right to claim everything else that the father of that child should do for it and for her. If it is possible for this Society to do anything to influence legislation in that direction we should do it. We should certainly give Dr. Doering hearty thanks and approve the paper in a public way.

Mr. Joseph W. Errant.—I have been brought in contact, from the lawyer's side, with a good many of these cases, and speaking from that standpoint I heartily approve of what has been said here this evening. Every word the speaker of the evening has said in regard to the bastardy laws of the State of Illinois is true, and if he had spoken stronger he could not have gone far astray. It is simply another illustration of the fact that many of us meet with in considering the laws of the State of Illinois, that whereas in material prosperity we claim to be one of the first States of this Union, yet so far as our legal system is concerned we are in the dark ages. This is only one of a thousand instances that might be brought up to show the weakness in our practice and in our laws, and this brings home to us this thought: What we need in the State of Illinois is a commission of men learned in the law, who have had wide experience and will devote five or ten years of their lives, by the consent of the people, to investigating this subject and devising for us a legal system under which this great community may go forward in the future. Three-fourths of the States of this Union have laws making seduction a criminal offense. The great State of Illinois by this bastardy act gives a license to any man to seduce any woman in this community that he may see fit to follow. A license, that's what it is, and nothing else. Yet, when it was proproposed some four years ago to place a law on the statute books of this State making seduction a criminal offense, the men in the committee said, "it is all very well to protect your daughters, but we must also protect our sons; what will become of the poor boys if we place such a law as this upon the statute books of this State?" That is the way they looked at it. So back of this law there must be public opinion. There must be a social opinion which will demand a different order of things, which will look at mothers from a different point of view. Back of such legislation as you call for, there must be a social opinion among women which will not trample upon any woman who is placed in the position you have described to-night, and which has come under my observation, not once, but a hundred times, not the social opinion of the mother, for instance, who when her son has done a wrong act passes it over and gladly welcomes him back to the home, but shuts the door to the daughter who has possibly made a misstep. So in addition to what Dr. Doering has said I would impress upon you the fact that this question is a very large one indeed, that it is not merely a question of legislation and law, but also a question which has very much to do with the social opinion of men and women.

It is an absurdity to assume that a woman can bring up a child on the pittance which this law provides. Further than that there is no provision made under this law for the long period of inability to work which may precede the birth of the child; and if the child does not live there is no payment at all. It is purely a question of support. This law is simply one evidence of many absurdities on our statute books, all of which ought to be done away with and better provisions made. We face the fact that there is not sufficient public opinion in this community to demand even the law which I have described, and which provides that seduction shall be made a criminal offense, whereas in three-fourths of the States such a law exists. We have furthermore to develop a social opinion which will consider this question from a larger point of view. It is a social question, and it is also a legal question.

Mr. David J. Wile:—Inasmuch as the proceedings of this meeting are to be published to the world, it is but proper that exactness should characterize statements concerning the bastardy statutes of Illinois. Interesting as is Dr. Doering's paper, it has not given an accurate statement of the law as it stands to-day. In addition to what has been stated, the statute provides, that after a defendant has been adjudged the father of the bastard child—in case he refuses or neglects to give such security as may be ordered by the Court—he shall be committed to the jail of the county, there to remain until he shall comply with such order, or until otherwise discharged by due course of law. *Any person so committed shall be discharged for insolvency or inability to give bond; provided, such discharge shall not be made within six months after commitment.*

The statute further provides: The mother of a bastard child, before or after its birth, may release the reputed father of such child from all legal liability on account of such bastardy, upon such terms as may be consented to in writing by the judge of the County Court of the county in which such mother resides: Provided, a release obtained from such mother in consideration of a payment to her of a sum of money less than four hundred dollars, in the absence of the written consent of the county judge, shall not be a bar to a suit for bastardy against such father, but if, after such release is obtained, suit be instituted against such father, and the issue be found against him, he shall be entitled to a set-off for the amount so paid, and it it shall be accredited to him as of the first payment or payments: And provided, further, that such father may compromise all his legal liability on account of such bastard child, with the mother thereof, without the written consent of the county judge, by paying to her any sum not less than four hundred dollars.

I do not regard Dr. Doering's proposition of *ipso facto* marriage as a practicable remedy. In its very essense, marriage in the first instance is purely matter of contract, not enforceable against the will of either party. The action for breach of a promise to marry is one to recover damages for breach of a *contract*, not for the commission of a *tort*. An enforced marriage does not mean support.

The law provides for the recovery of mere money damages in cases of seduction. The ability to enforce payment depends upon a defendant's financial condition. Strange as it may seem in these days of moral enlightenment, Illinois lags far behind her sister States by failure to treat real seduction as a heavily punishable crime. There is reason to hope that the next Legislature will remedy this defect in the law.

The real truth is, that illegitimate births occur principally among those classes of our population where pecuniary redress is practically impossible, because of poverty. In the so-called "higher classes of society," other means seem to be accessible, whereby the responsibilities of paternity and maternity may be evaded. That those means come within already existent criminal inhibition, quite as worthy of consideration as the subject discussed this evening, may be safely admitted.

It occurs to me, however, that many of the shortcomings of the present bastardy law might be remedied if the jurisdiction of Courts of Chancery were enlarged so far as to permit the prosecution of a bill for separate maintenance for the benefit of ihe innocent child, under provisions similar to those which now exist in favor of wives who, without their fault, live separate and apart from their husbands.

The broader and deeper question involved cannot be settled by enacted laws or judicial decrees.

Dr. J. B. Hamilton —In regard to one point suggested by the last speaker there is a fact bearing on this which is a precedent: In the Legislature of Washington Territory some years ago they enacted a law in regard to white men living with Indian women, that all such as were found and reported to the court should be recorded as legally married and the children should be declared legitimate. That was carried into effect, and hundreds of persons who had gone into Washington Territory at an early day and lived with squaws, were obliged to take care of children under the act cited. I cannot give its exact date, but I think it was 1875. That carried into effect the suggestion of Dr. Doering, and I never heard that there was any legal objection to it on the part of anybody.

Mr. L. Kistler:—It is perhaps difficult for any one to suggest just exactly what would be the proper line to take. It is true that a man who is responsible for the existence of an innocent being should be held responsible for the support, not only for a certain number of years, but as long as it may be necessary. It seems to me an ordinary rational view would demand that a man should be held responsible by society for his acts. In my practice I have prosecuted one bastardy case, and that set me to thinking. I cannot repeat my language, but the defendant got so angry that he got up and shook his fist in my face, and of course the result was he was convicted. However, he made amends by marrying the girl subsequently. I am inclined to think that our law is simply the outgrowth in a measure of the average public sentiment. We may hold advanced views, but as a rule no thoughts or views culminate in the law, because law is simply a crystallization of the average common sentiment of society. I sometimes am discouraged, but recently I had occasion to examine the jurisprudence of the State of Rhode Island, and I found that it is about two hundred years behind the times; so I came back to the State of Illinois feeling that we have made considerable advancement.

In regard to this Bastardy act, it could be improved. As it stands it is simply an attempt to provide for the support of the innocent child, irrespective of the effect it may have upon the mother or upon the father, but it fails to do this under the existing state of society. There should be abundant provision for the child until it is able to take care of itself. I would feel inclined to go so far as to make the father thoroughly responsible for the child. As to the mother, of course the bastardy act goes upon the basis that one is as guilty as the other and is not for it to say which it is. I think, however, that in most instances the man is the responsible party, although there seem to be, in the condition of society as it is, some exceptions. But in any case I would go as far as suggested by the speaker before me, that there should be more abundant provision by legislation that the innocent one should be provided for, and the father be held responsible just the same as if the child had been born in wedlock.

Judge Horton:—It would not be an easy matter to those who have had any experience to say just how you would

defend a man, guilty or innocent of this charge. I have never known a man to be acquitted when he was charged with it, and a lawyer who could try such a case before the average jury and get the man free when the woman accuses him, would have a successful practice in Chicago.

As to the topic of legislation, I do not know whether Dr. Doering knew what he was assuming when he offered to take charge of this, but I had a little experience some years ago when I sent down to the Legislature an amendment to the divorce law. It was supported by every paper in Chicago. The *Tribune* got the views of nearly all the judges in the State of Illinois, and published column after column recommending it. It passed the House but failed in the Senate. and some wag suggested to me that the reason it failed was that every one of those fellows knew that his wife had good reasons for a divorce, and did not approve of enlarging the subject.

American Electro-Therapeutic Association.

Second Annual Meeting, held in New York, October 4, 5 and 6, 1892.

WILLIAM J. MORTON, M.D., PREST.

FIRST DAY OCTOBER 4—AFTERNOON SESSION.

(*Continued from page 188.*)

I am not aware of any further literature relating to general treatment by means of electrodes.

I may remark here in passing that I have found that the cataphoric power of electricity is not confined to galvanic currents alone. With the aid of the "Static induced" current first developed by me from an influence machine and using block tin electrodes and blotting paper to retain solutions, I have caused cocaine anæsthesia, and introduced iodine and many other medicines through the skin. Using tincture of iodine as described, over the spinal cervical centres, I have arrested completely a case of progressive muscular atrophy in which the disease had already invaded and was successively invading the muscles of the upper extemity.

I have also devised and used a cataphoric mouth electrode, by means of which solutions of medicines held in the mouth are caused to enter the circulation by the mucous membrane of the mouth, thus avoiding the fluids of the stomach, and a similar electrode which performs the same function per rectum.

Electric Baths.—The electric bath itself, has long been regarded as not a little *ex cathedra* even to the liberal minded medical "electrician," and much more so the "medicated" electric bath.

A careful study of the physics and physiology of the subject will convince even the most skeptical of the fact that medicine can be practically introduced through the unbroken skin by immersing the patient in a fluid electrode which in fact such a bath constitutes. Edison's experiment of causing the patient to immerse the hands in fluid was in reality a limited electric bath, and now that we have his authority as well as that of Mr. A. E. Kennelly, who personally superintended the experiments, we may accept without shrinking the principle of the "medicated" electric bath. Moreover, high scientific approval of this method is not wanting in the careful work of Gärtner, Cagney, Steavenson and many others.

Cataphoric Demedication.—It is scarcely probable that anything more than extraordinary circumstances would call for the elimination of medicinal substances from the body by means of electricity, since it is probably impossible to prevent their natural elimination, and since again other simple means of elimination are available, as for instance the administration of iodide of potash in lead poisoning.

Still the occasion may arise as in ulcers due to direct poisoning of metallic salts employed in electro-plating. Such was the occasion, I believe, which first gave rise to the method. About 1855, a Mr. Vergnés, an electro-plater of Havana, Cuba, found that he had an incurable ulcer due to frequently plunging his hands into solutions of cyanide and nitrate of silver and gold. One day, accidentally immersing his hands into the bath already prepared for plating he found that the negative element had received a metallic coating. The hint was acted upon and a number of similar treatments resulted in the rapid cure of the ulcer.

From this incident sprung the Vergnés "electro-chemical bath" as it was named, and practiced by a Mr. Royal in New York City. Its vogue seems to have depended largely on a rampant idea that mercury clung to the system of many unfortunates and should be eliminated by this method. The bath tub was of copper and insulated from the earth, the patient was also insulated from the tub by sitting on a wooden-seat. The water, in case gold, silver or mercury was to be eliminated was acidulated with nitric or hydrochloric acid; if lead was to be removed, with sulphuric acid. The positive pole of a thirty cell galvanic battery was held in the hands while the negative pole was connected to the copper bath tub. A porcelain tub in which is immersed a copper plate will do equally well. In the same year M. Poey made this method the subject of a communication to the French Academy.[4] [5]

Vergnés also reversed the current in his bath and claimed to introduce medicinal substances, notably phosphate of iron in a solution to which nitric acid was added, and also quinine. The patient sat in a bath containing the solution of the medicine holding the negative pole in the hands. No physician could consent to put in practice a method as inexact as the above outlined, unless advantages not obtainable by stomach or by hypodermatic administrations can be demonstrated.

Experiments could be easily made which would determine the accuracy of these claims. The question of resistance comes to the fore, if this is too much reduced by acids and inorganic salts the conveying power is also diminished.

Gärtner and Ehrmann[6] have already practically to a large extent answered this objection in their published experiments of introducing corrosive sublimate by the medicated bath method in the treatment of syphilis. Four to six grams of corrosive sublimate were put into the water; the current strength was 100 ma.; the duration of treatment 15 to 20 minutes; at the end of four days there was still to be found in the urine of 24 hours, 0.7, 0 3, and 1·3 mgr. of mercury. Kroneld has corroborrated Gärtner's results in Prof. Lang's clinic in Vienna.

In conclusion, while we must grant the solidity of the physical facts we yet need much clinical experience and, the time has not yet come for a judicial expression as to the value of these methods in general medicine.

NOTES UPON THE CHEMISTRY OF CATAPHORESIS.

By W. H. Wailing, M.D., Philadelphia Pa.

Before entering upon the discussion of the subject-proper let us glance at the tissues and cells of the human body, and briefly consider the effects of the electric current upon them.

A condensed classification of the tissues of the adult is as follows:

1. *Epithelial tissues.*—The primitive surface tissues of the inner and outer germ layers, which are variously modified for several distinct duties.

[4] See Medical Electricity. Steavenson & Jones, Philadelphia. 1892.
[5] See A Treatise on Medical Electricity, by Julius Althaus, Philadelphia. 1873.
[6] Lewandowski, Electro diagnostik and Electro-therapeutic. Wien and Leipzig, 1892.

2. *Nerve tissues.*—Springing from the former and conducting, controlling and distributing impressions.

3. *Muscles.*—Or contractile tissues in close relation to both of the previous groups.

4. *Connective tissues.*—The materials used in the general body architecture. Bone and cartilage, modifications of connective tissue, we need not consider. The blood vessels are chiefly made up of connective tissue, and even the blood itself may be considered as an outcome of this fourth group since the cells of the blood are first formed in the mesoblast and later from the connective tissue corpuscles.

The various secreting organs are made up of epithelial cells, held together by connective tissue, and in close relation to blood-vessels and nerves.

All these tissues have their origin in the primitive material which we term *protoplasm*. This protoplasm has certain movements which characterize its life and these movements are affected by mechanical, chemical and electrical stimulation, differing in character. That if slight excitation by the induced or faradic current, increases the rapidity of the movements, stronger ones cause tetanic contractions, and numerous and powerful ones cause coagulation. In this connection, I enter my protest against the use of strong faradic currents given by the street-fakir, or the so-called testing machines found in public places. Such experiments are dangerous, and should be prohibited by law.

The galvanic current causes dilatation and contraction of the blood-vessels by direct stimulation of their muscular fibers, acting in like manner upon the lymphatics, "causing more ready circulation of the blood and nutritive fluids; increased power of imbibition of the tissues; increased osmotic processes; changes in the disassimilation and nutrition of the nerves on account of their stimulation or sedation; changes in the molecular arrangement of the tissues, caused by electrolytric processes; and finally the consequences of the mechanical transport of fluids from one pole to the other." (Erb.)

The current exerts a more or less direct influence upon the trophic centres in the anterior cornua of the spinal cord. Its action on the brain, we will not consider in this paper.

Under powerful shocks from a dynamo, the red blood corpuscles are immediately disintegrated and destroyed, producing instant somatic death. Very strong currents from a galvanic series will also disintegrate the living cell in the interpolar region. Under moderate currents, interpolar effects and changes are scarcely noticeable, yet they take place in a proportionate degree. These changes in the vital processes, and the consequent good results obtained by the use of electricity alone, are often greatly increased by the timely and judicious combination and application of the galvanic current and certain drugs and chemicals. This method I have styled anodal and cathodal diffusion. It is also called cataphoresis. I need not go into the history of the subject, it being somewhat familiar to most of you. I wish more particularly to call your attention to the chemistry of the poles of the galvanic series, and the corresponding chemistry of the substances to be used with them in cataphoresis.

First as to suitable electrodes. Tin has been quite extensively used as it oxydizes slowly, and the resulting compound is harmless. Gold and platinum are better, but too expensive. In place of either of the above metals I use carbon. The dise which is about one and one-quarter inches in diameter is shaped with a file so as to receive an insulating ring of hard rubber, which projects about one eighth of an inch forming a shallow cup with the carbon as the bottom. Before the rubber is permanently adjusted, the carbon is submitted to a bath of hot paraffine and fully saturated with it. This renders the electrode impervious to all liquids, while not interfering, practically, with its conductivity. The rubber ring being adjusted, and a suitable attachment made, the diffusion electrode is ready for use. As a vehicle for the medicament, absorbent cotton or white blotting paper discs may be used. In some cases where the whole limb or a joint is to be treated, my bandage, made of tin foil, is to be used over the wetted bandage. This latter method may be used to advantage with the lithium salts in gouty joints. The current intensity to be used is determined to some extent by the sensations of the patient. I am in the habit of using from five to ten or fifteen milliampéres, with sittings lasting from five to ten or fifteen minutes, the drugs thus used being morphine sulphate, cocaine hydrochlorate, mercury bichloride, potassium iodide, lithium citrate and aconitine, in solution, and tincture of iodine and chloroform. Other substances have been mentioned and used by prominent operators, notably helleborine, onabain, strophanthin, menthol, carbolic acid, etc., by Dr. Frederick Peterson.

Does electrolysis take place during cataphoresis, and what are the reactions? The law of chemical affinity is an electrical one, and "polarity" determines the formation of all crystallizable bodies. Some substances are always electro-positive in their affinities, and some are always electro-negative. For instance, hydrogen is always electro-positive and oxygen is always electro-negative. Some elements, on the contrary, are variable. Copper is electro-positive when coupled in a galvanic pair with mercury, tin, iron, nickel, zinc, lead and some others, but electro-negative if thus coupled with silver or platinum. Silver is electro-negative towards lead in a solution of dilute nitric acid, but electro-positive toward the same metal in a solution of cyanide of of potassium.

Regarding electrolysis, which I think takes place in all our cataphoric applications, with possibly a few exceptions, Prof. Rhoé says: "It seems clearly established by numerous experiments that galvanic conductions through liquids is always electrolytic; in other words, there can be no conduction of an electric current through a liquid without that molecular re-arrangement in the fluid through which the current passes, and that molecular disintegration at the surfaces of the electrodes which we know as electrolysis; that the various processes supposed to go on in the body under the influence of an electric current, and termed by different authors absorptions, electrical osmosis, and electro-catalysis, will properly be ranged under the single conception of electrolysis.

"It is held by some that there is an actual transfer of ions from one pole to the other. By others that there is a polarization of the molecules, so that the electro-negative element is forced towards the anode, and the electro-positive element towards the cathode, where the terminals appear as ions.

"It must be remembered that electro-negative bodies may acquire electro-positive polarity, and *vice versa*, the polarity of the elements depending upon their relations to other elements in a compound, rather than upon any intrinsic property. This will account for some otherwise anomalous changes in electrolysis."

Whilst this latter statement is true, there are many elements that are constant in their chemical affinities.

We will now consider some of the substances used in cataphoresis in their relations to the anode and cathode. (I have already referred to hydrogen and oxygen.) The law of polarity will be found in full force here. The hydrochlorate of cocaine has the chemical formula of C_{17} H_{21} NO_4 HCl. Used upon the anode, the acids being electro-negative would collect at the anode, while the base, cocaine, being

electro-positive, would be repelled and driven into the tissues. The fact that this salt, used upon the cathode, does not produce anæsthesia, proves this clinically.

Chloroform, having the chemical composition CH. Cl_3, and which may be considerered to be the chloride of the trivalent radical formyl, would also, theoretically, be used on the anode. although it is denied by some that electrolysis takes place in this substance, with the weak currents used. I have never used it with the cathode.

With morphine sulphate, mercury bichloride, lithium citrate and aconitine, the anodal pole is used, and for the same reason; the base being electro-positive is driven into the tissues. If, however, we wish to introduce the benzoic acid in benzoate of sodium, we should use it with the cathode.

Iodine and iodide of potassium. It has been the custom with all operators to use these substances with the anode. Now iodine is an electro-negative always, either when alone, or in combination with potassium, and when acted upon by the galvanic current, will be repelled by the negative, and attracted by the positive pole. This is easily demonstrated by wetting a piece of absorbent cotton with a strong solution of iodide of potassium, place it upon the cathode and a thin piece of coagulated egg albumen upon that, wrap the anode in absorbent cotton and wet it in plain water. Place the anode upon the albumen, turn on about thirty ma. of current, and you will soon perceive free iodine on the anode, it having been freed from its combination by electrolysis and forced through the albumen. Reverse the current, when instantly free iodine appears at the lower pole wetted with the solution of potassium iodide, and gradually disappears from the upper electrode, where it had before collected. The iodine does not appear in the interpolar region, but we must remember that we are now dealing with dead animal tissue, and not with the living cell capable of absorption and assimilation,

Repeat the experiment, using the tincture of iodine, and a piece of chicken skin in place of the albumen. (Of course fresh cotton is also used.) Place the skin on the cotton wet with the iodine, it being on the cathode, the flesh side uppermost. Wet the other pole in plain water as before, turn on a current of five milliampères for five minutes, and the iodine will appear at the anode. Take fresh material all around, and repeat the experiment with the poles reversed. No iodine will appear at the cathode, which is now on top. As before stated, iodine is always electro-negative, consequently is always repelled by that pole.

A prominent operator and writer reported a case some time since in which he used the tincture of iodine on a goitre with the anode, and claimed wonderful success therefrom. That there was an increased absorption by reason of the stimulation and increased vascularity as a later result, I am ready to admit, but am not willing to concede direct penetration of the substance due to the direct action of the current. Had he used the cathode, there would have been all three, increased stimulation and absorption, and a direct introduction of the substance into the tissues.

In certain skin affections, especially those of a parasitic origin, I have used mercury bichloride on the anode with most happy effect, when other remedies have failed. This method is safe, pleasant and sure. In herpes circinatus, ringworm of the scalp, etc., a 1–1000 solution of the bichloride on the anode, using a current suitable to the case, will soon result in a cure.

To recapitulate: Use with the anode, all substances the base of which, being an electro-negative body, you wish to introduce into the system, and with the cathode such as are electro-positive in character, or when it is the substance taking the place of an acid, as in potassium iodide.

I was the first to call the attention of the profession to the *chemistry of cataphoresis*. This was done before the Philadelphia Electro-Therapeutic Society, February 12, 1891,[1] and again before the Alumni Association of the Medico-Chirurgical College, March 20, 1891.[2]

I shall continue my investigations in this interesting field with still other substances, and report results at some future time.

1606 Green St.

CATAPHORESIS IN GYNECOLOGY.

by Dr. A. H. Goelet, of New York City.

Unfortunately or perhaps fortunately for my hearers there is little to be said upon catphoresis in gynecology. So far as I am able to judge from my own experience catphoresis has a limited usefulness in gynocology. Perhaps others have pushed their investigations further and have formed a different opinion, and for this reason I would prefer to listen rather than endeavor to impart any information, but I have consented to respond hoping that the little I may be able to contribute may possibly suggest more extended investigation in this direction. If I have not done this myself it is because I believe I have been able to accomplish the desired end more readily in some other way.

Some years ago I did considerable work with cocaine upon the positive pole in the vagina for the relief of pelvic pain and congestion of the pelvic organs, and believe I succeeded in affording relief in many instances where, at that time, I was unable to relieve so readily by other means. Subsequently morphia was employed for the same purpose and I must say with some satisfaction. But afterwards my attention was directed to the tension faradic current which was found more serviceable, and cataphoresis for this purpose was abandoned.

Now the only use I find for cataphoresis is to produce anæsthesia of the vaginal wall, which renders puncture more tolerable to the patient. With a 4 or 8 per cent. solution on the positive pole, with 10 or 15 m. used for five or six minutes the vagina can be rendered so insensitive that the needle can be introduced without the patient being conscious of what is being done, and in nervous, highly sensitive patients this is a great advantage. Unless the tumor, or mass punctured, is unsually hyperæsthetic the pain sometimes experienced while the current is in force is very much diminished also by applying this drug in this manner before hand, and the aching which sometimes follows immediately after puncture is materially lessened.

I have made some experiments with ergot and iodine introduced through the vagina by this means but cannot say that the results so far have been encouraging. I have discovered however, that the vagina can be very thoroughly blistered with these remedies, if the current is too strong, in fact with a comparatively mild current. Dr. Hunter McGuire has, I believe, obtained some satisfactory results from the use of iodine in this manner in fibroid conditions.

By means of this process it is possible to introduce drugs into the interior of the uterus and as this is an excellent absorbing surface no doubt something may be accomplished in this direction. A novel method of application has been suggested recently by a gentleman in this city whose name I cannot now recall. He employs plaster of Paris moulded around a platinum wire and saturates the plaster with the drug to be employed.

The use of iodide of potassium has been mentioned as a remedy to be used by cataphoresis. As I understand it, this is not strictly cataphoresis, since the solution is decomposed, but it is rather electro-chemical decomposition and not electric cataphoresis.

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[1] See Times and Register, March 21, 1891.
[2] Ibid., April 9, 1891.

As I have said, I would prefer to hear from some one who has made more extended investigations.

THE USES OF ANODAL DIFFUSION IN NEUROLOGY.

By F. Peterson, M.D., of New York.

In discussing this question of the employment of electric cataphoresis in nervous diseases I can hardly do better than quote from one of my former papers the main points at issue.

"I was led myself into making a study of electric cataphoresis by my own work in a neurological line, and my first experiments were conducted with a view to relieving pain. I received the suggestion after vainly endeavoring to combat severe supraorbital neuralgias in several patients. All known appliances and agents of the healing art had been ineffectual, blistering, electricity, aconitia, and the progressive series of narcotics and anodynes, which generally terminate with the morphine habit. One of the patients had suffered from morphine inebriety for a year, but had recovered from that with her supraorbital anguish unassuaged. I found that ten to twenty per cent. solutions of cocaine on the anode gave absolute relief in these cases for from four to ten or eleven hours, and without constitutional effects of any kind. A deep analgesia was produced in the area covered by the anode. No doubt constitutional effects would ultimately result by indefinite continuance of the application.

Since that time I have made it a point always to use the cocaine solution in any sort of superficial pain in which I think the anode to be of advantage. The method does not mitigate neuralgic pains which owe their origin to lesions far back of the point to which the electrode is applied, as in disease of the Gasserian ganglion, or the idiopathic neuralgias of central origin; and it is here that cocaine cataphoresis has actual diagnostic significance. If the pain is relieved by the treatment, the lesion is in the immediate neighborhood, or peripherial to the anæsthetized area, and this would furthermore suggest the possibility of permanent cure by neurectomy. This idea of the diagnostic value of cocaine cataphoresis is Dr. Starr's, and it has some sort of corroboration in a case of intense supraorbital neuralgia which I lately saw with him. A 20 per cent. solution of cocaine used with a strong current for a considerable period of time did not diminish the paroxysms of pain in the least. A few days afterward neurectomy was performed, and this also had no effect upon the neuralgia.

Cocaine employed in this way does not *cure* neuralgias of peripheral origin. All that is claimed for it is that it gives relief without producing constitutional effects, and is, therefore, superior to any narcotic given internally, and to any other local application.

Other local anæsthetics are chloroform, aconitia, ouabain, strophanthin (Arnaud's), helleborin, menthol, and carbolic acid.

Chloroform causes a dermatitis, and should be used only when counter-irritation is desired in conjunction with a transitory anæsthesia. I have employed chloroform cataphoresis in one case of cervical neuralgia with good effect. Helleborin and aconitia I have also used successfully, but the latter, while it gives rise to a deep analgesia, also causes painful burning and smarting, unless combined with a cocaine solution.

While my experience with the method has been chiefly in neuralgias of superficial nerves, I have not failed to give it a trial in other conditions where it seemed to be expedient. I have been using cocaine and helleborin with the anode in two cases of tic convulsif of late, placing the electrode over the trunk of the facial or one of its branches. Whatever may be the explanation of its effect, these cases certainly show very great improvement, and a remarkaale diminution of the spasm after each application, such as was not obtained from the employment of the electric current alone. In a case of blepharospasm, cocaine cataphoresis practised near the outer angle of the eye produced a very marked change in the extent and frequency of the movement. I have no doubt, however, that the results would be better still if we had some drug to use with the anode which would act upon motor nerves in the same way as the local anæsthetics act upon sensory nerves; if, in other words, we had some trustworthy local paralytic. Atropia and curarin do not seem to answer the purpose.

There can be no doubt that the effects of the galvanic current upon nutrition are in part due to the cataphoretic transfer of molecules of protoplasm and liquid from one cell to another, or from a cell to a capillary vessel in the path of the anodal stream, and since the diffusion takes place more readily and more quickly in direct proportion to the current strength it behooves us to employ as many milliampéres as feasible in our galvanization of the atrophied and paralyzed extremeties of poliomyelitis, chronic neuritis, and peripheral nerve trauma. Moreover, there would seem to be a possible advantage in the use of nutritive emollients in conjunction with the labile application of the anode to the atrophied member, just as they have been combined from time immemorial in the exercise of the aliptic art (massage)."

General Discussion.

Dr. Massey had made use of this method in connection with cocaine applied on cotton to the vagina and to the uterus. The anæsthesia was not marked in the vagina, and he attributed this to the fact that the upper portion of the vagina is normally insensitive. A more positive anæsthetic effect had been noticed from the positive pole in the uterus. The method is chiefly of service in producing very superficial anæsthesia, and is, therefore, not very useful in gynecology.

He had tried cataphoresis in connection with iodide of potassium in the treatment of enlarged glands in the neck, but he thought it objectionable for strong currents cannot be employed on account of the great irritation of the skin which they produce. The glands were considerably swollen for some days after each treatment. Better results were observed by using his favorite soap electrode, and a current of sixty milliampéres.

In making a vaginal application he usually employed a zinc electrode, insulated with rubber, and wound tightly with cotton, and he had experienced considerable difficulty in keeping the cotton sufficiently moist. When the cotton became so dry as to offer undue resistance to the passage of the current, he reversed the direction of the current, making it negative. This would cause the cotton to become moist again, and allow the current to pass more easily. The method was a good illustration of electro-convection.

As an example of electric elimination, he referred to a practical use which he had made of it. While removing hair from the face, with an iron needle, he had accidentally made this needle positive, with the result of immediately producing a metalic stain in the skin. By reversing the current, and using a clean needle, the metal was in a few minutes re-deposited upon the needle, and this too, without greatly increasing the irritation. It had not infrequently happened that without our knowledge we had made use of cataphoresis to impregnate our patients with the metal from the positive electrode. He had employed iron on the supposition that this metal was not a foreign substance in the human system.

Dr. Hutchinson thought the effect was about the same

whether the solution was applied on one or the other pole? Cataphoresis at present occupies about the position of the phonograph, and its practical value has not yet been determined. With the exception of a few observers—notably our owo members, Drs. Peterson and Morton—most of us had not accomplished any very definite results with it.

The President said that he wished to be placed on record as a firm believer in cataphoric phenomena, and he thought simple cataphoresis would prove to be one of the most important branches of our subject.

Dr. F. von Raitz, of New York, said that there seemed to be confusion concerning this subject, some observers claiming that there was only anodal diffusion, others, that there was only cathodal diffusion, while still others, believed that the diffusion occurred at both poles; yet these widely different views are held by men all of whom had had large clinical experience. The speaker said that in the paper which he read before the Association at their last meeting, he stated that as it has been generally admitted that acids are found at the positive pole, and alkalies at the negative, it must also be admitted that certain chemicals are more easily diffused from one or the other pole, and others again, from both.

Dr. Nunn said that the reference had been made to Verrier's experiments in 1855. He had repeated these, and had published the results. So far as mercurial de-medication was concerned, these results were entirely negative, and also as regards Verrier's experiments and claims. He had recently experimented with cocaine and other substances in connection with extirpation of urethral caruncles, and had found the method quite useful. He had also followed the experiments of Hunter McGuire, and like the President, he had applied the iodide of potassium to *both* poles. He did this because he thought this would favor the interchange of the elements, and he believed that he had seen benefit from it. It was bad policy to use iron needles in removing hairs; the delicate point of a gold needle will pass into the skin with the utmost ease if a mild negative current is first turned on. For twenty years, he had used the same two gold needles, and he had made extensive use of this method of epilation, removing six thousand hairs from one patient alone.

Dr. E. V. Agramonté, of New York, by irritation, said that he had witnessod the effect of cataphoresis in his own person, as he had presented himself as a subject for experimentation at the time when Dr. Peterson first presented his paper on cataphoresis before the New York Academy of Medicine. Five minutes after introducing the cocaine into his hand by the current, the hand felt entirely anæsthetic over an area of two inches in diameter, and the skin which is quite thick, could be pierced very deeply with a needle without his feeling it. We all know that we cannot apply a 10 per cent. solution of cocaine to the unbroken skin of the hand without the aid of electricity, and obtain any such result. If he recollected correctly, the anæsthesia remained more or less pronounced for several hours, and the application produced no untoward effect excepting a redness of the part which lasted for a day or two. He thought this report was due to Dr. Peterson, and he offered it as a personal testimony to the passage of a sulution through the epidermis, which we know is an impassable barrier to endosmosis.

Dr. E. L. H. McGinnis of New York, said that his experience with cataphoresis had been limited to three or four cases, and in these no definite results were obtained. He had tried it with cocaine on the positive pole, and applied to the vaginal vault, and to the skin. No effect had been produced on the latter, and a slight action was observed in the former case, which was attributed by him to the cocaine itself, irrespective of the action of the current.

Dr. Massey quoted the experiment of moistening the negative pole with a solution of iodide of potassium, and placing it on the back of an individual, and passing a current while the positive pole was placed to the breast, and so making the iodine transverse the body, just as it would a bowl of water. He was inclined to think we were mixing up electrolysis with mere catephoresis.

The President remarked that this was the famous experiment made as far back as 1833, and repeated hundreds of times since then without success. He had himself repeated the experiment, but could not obtain any iodine at the positive pole. Undoubtedly, free iodine would be eliminated through the kidneys, and could be easily detected in the urine, but this was a very different matter.

Professor Houston, in closing the discussion, said that he had not known before that electro-therapeutists looked upon the ordinary action of the current as a catephoric action, as he had never seen it so stated in any standard medical work. It is a well established fact, that there is a normal, and abnormal catephoresis, and on this account, he was surprised that every now and then there should a discussion as to the difficulty of estimating the resistance of the human body; for, if cataphoric action takes place, the resistance must vary with the strength of the current upon which the cataphoric action depends, and moreover, it will be symmetrical. There is also a variation in the resistance due to electrical polarization, but this is asymmetrical. He had been asked if there was any peculiar effects existing in the intra-polar region at the surface of the membranous sacs in the human body. The current must necessarily cause an engorgement of some tissues, and a depletion of others. He could not agree with the president, that osmosis might be neglected in the study of the physics of electro-osmosis. The fact that in osmosis there is an unequal mixing, shows that there must be unquestionably a transportation of material from the negative to the positive pole, as well as from the positive to the negative, and for this reason, there does not seem to be any occasion for placing the material on both electrodes. He was not aware that any one had claimed to produce free iodine in the manner described by Dr. Massey, although this might be expected as all the phenomena of cataphoresis are dual phenomena. The fact that an electric current reverses the action of cataphoresis is no proof that the transportation is purely a mechanical one; indeed, he thought this fact showed how intimately electrical phenomena are associated with those of ordinary osmosis. The current produced by ordinary osmosis does not tend to help but rather to retard the passage of a liquid from the positive to the negative pole. It does not, therefore, seem possible to consider cataphoresis independently of osmosis, for apparently no osmotic current is produced without the development of an electric current.

FIRST DAY—OCT. 4.—EVENING SESSION.

STABILE ELECTRODE, OLD MATERIALS NEWLY ARRANGED.

By R. J. Nunn, M.D., 119 York St., Savannah, Ga.

The ingenuity of the students of electro-therapeutics has been so thoroughly exercised in looking for new materials for use as stabile electrodes, that it would seem that a limit has been wellnigh reached and no new substance is likely to be proposed for that purpose. For that very reason, however, suggestions for the modification of some of the older forms, perchance for improvements in the methods of using old materials, may not be without profit and advantage.

Excluding from this discussion all forms of cauterizing electrodes, it will be observed that the one quality common to all electrodes used for conveying currents of high potentiality is moisture, and this is is true of every variety from

clay to punk. It follows then that the true electrode is water.

From this it may reasonably be argued that the arrangement which will bring the largest amount of water in closest contact with the skin, and withal is most convenient to handle, will be the form which will commend itself most to the working electro-therapeutist.

Without stopping to canvass the merits and demerits of many varieties (both of form and material), which from time to time have claimed the attention of the profession, let me here say that the simplest, handiest, most convenient and withal the most efficient material which has presented itself to me is cotton or linen cloth.

Of course this has been used by every operator, but it may not have been used in the manner about to be suggested.

Assuming that the quantity of fluid interposed between the surface of the body and the metal electrode has much to do with the distribution of the current over a large surface, it is my habit to employ such a number of pieces of the material used as will make a pad of an inch to an inch and a half in thickness when wet. If lint is used forty or fifty pieces will usually be found sufficient. Less will do with patients who are not very sensitive, but sometimes more may be used to advantage. It is hardly necessary to say that the pad may be a single mass or may be compounded of pads of different thicknesses.

The construction of this pad is simplicity itself.

A number of pieces of material—say lint—are cut of the size desired. These are sewed together by a single loose stitch in the center which keeps them in place. The stitch must not be tight or an indentation will be made in the pad, which is not desirable.

This pad may be used with or without a piece of chamois leather to insure closer contact with the skin.

Assuming the chamois to be employed, the first step will be to thoroughly moisten it and carefully apply it, avoiding wrinkles and air bubbles.

Over the chamois so applied a few layers of well wetted lint should be smoothly applied, and the remainder of the thickness desired is made up of moist lint.

It is well to have the first layer wringing wet, as more perfect contact is thereby assured.

If the pad is all in one it should be laid out flat, then soaked with hot water, the excess of water pressed (not wrung) out, and the contact surface sprinkled with sufficient water to make it quite wet. It is then applied to the part.

After the pad has been placed in position the metallic conductor is placed upon it, and the electrode is complete.

It may not be amiss to mention the well known fact that the size of the metallic plate has much to do with the distribution of the current. The plate should be pliable, so as to adapt itself uniformly to the pad, which, as is already well known, is a necessary condition if you would have the current evenly distributed over the surface.

Of whatever material the electrode is made, however carefully applied, it is, according to my experience, almost impossible to make perfect contact over large surfaces without recourse to additional pressure, and for this purpose it is my habit to use by preference a bandage. By its use and by firm pressure a much higher ampèrage can be borne than when the pressure is not employed.

The novel features which it is here desired to emphasize are:

1. The recognition of the fact that water is the true electrode.

2. The use of sufficient thickness of cotton or linen cloth to permit the even distribution of the current.

3. The thorough saturation of the layers of cloth in contact with the cuticle for the purpose of ensuring the best possible contact.

4. The employment of an animal membrane under the pad, designed to minimize the local action upon the cutaneous surface.

5. The use of pressure to obtain more perfect contact over the whole surface, and thus permit of using a greater ampèrage.

Discussion.

Dr. Massey said he had not yet found an electrode equal to clay, which, when properly wetted, adapts itself thoroughly to the surface to which it is applied, and requires no pressure to keep it closely in contact with that surface. If fine, white China clay be employed, it enters into the very crevices of the skin. Clay being alkaline, lessens the resistance of the electrode itself, even when of considerable thickness, and the alkalinity may be of possible utility in helping to saponify the oil contained in the cuticle. To be at its best, the clay should be made over fresh at least every morning, and more often if many cases are to be treated. The speaker said he had also obtained excellent results from the use of pads made of thin cheese-cloth with some elastic material, like cotton wool. Instead of a metal plate, he prefers a flat spiral of wire, the turns of which are about half an inch apart. This arrangement adapts itself to the electrode much more perfectly than any metal plate can possibly do. The most important point, is the use of soap on any electrode, and no matter how good the electrode, there will be less discomfort when it is covered with a good lather.

Dr. Mosher, of Brooklyn, said she wished once more to call attention to her Indian meal poultice electrode. The softer variety of meal is cooked, and then placed in a double cheese-cloth bag of the size of the metal plate to be used, and the meal, while quite warm, is placed on the abdomen, and allowed to remain there for several minutes before beginning the treatment, in order that the warmth and moisture may have time to act upon the skin, and render it a better conductor. The metal plate is then laid upon the back of the meal, and if more pressure is desired, this can conveniently be obtained by the use of a small sand-bag. Very high currents can be passed through this electrode with very little discomfort to the patient. When lighter currents only are used, she employed a pad of from four to ten layers of cotton flannel, placed evenly over the surface. The meal poultice applies itself even more closely than the clay to the surface, and patients who have both forms of electrode used on them, express a very decided preference for the meal electrode.

Dr. Anna Galbraith, of New York, said that a stabile electrode similar to the one described in the paper had been in use for sometime past at the New York Orthopedic Dispensary. She preferred to wrap the wire gauze electrode in a number of pieces of linen, and this was pressed against the surface by means of a band of tennis belting, buckled tightly to the person. This belting was superior to chamois leather, as the latter shrunk, and became uneven. For the negative pole, she used cotton wrapped over the metal, and then covered with lint. The clay electrode while admirable in itself, was found not suited to dispensary practice.

Dr. Goelet thought he had solved the problem of furnishing a satisfactory clay electrode. The clay when the consistence of putty is first rolled into a flat cake, then covered with "lintine," which is compressed absorbent cotton, then covered with gauze, and backed with rubber. By thus covering the clay with cotton it does not soil the surface to which it is applied as does the unprotected clay. The neutral

plate, which consists of wire gauze, is placed onthe back of the clay cake and the binding post penetrates its several layers of coating. After being thoroughly wetted, this pad is placed on a zinc vessel containing warm water. It can be easily cleansed by washing with soap, or if the covering becomes stained, it can be bleached with a solution of the peroxide of hydrogen.

Dr. Robinson, of Albany. preferred wire gauze, as it was neither too stiff, nor too flexible for easy manipulation. The wire gauze can be nickel-plated, and then kept in sheets ready for use. When wanted, it is covered with three or four thicknesses of flannel, and for strong currents, with cotton battiug or "lintine." It was certainly the best electrode he had ever used where currents of moderate intensity only were required.

Dr. Rockwell said that after trying many kinds of electrodes, he had finally adopted the plan of keeping a large quantity of clay in a dish. The middle of the mass of clay was scooped out, and the hole filled with water. When an electrode is wanted, a sufficient quantity of clay is removed from the mass, and wrapped in a towel to remove superfluous moisture, after which, it is rolled to the proper size. With this electrode, he could always use a current of 75-100 milliampères without causing pain. For still stronger currents, the clay should be enclosed in gauze or tarltan, and in winter, it is desirable to keep the electrode on a warming pan, as suggested by Dr. Goelet.

Professor Houston asked if anyone had tried increasing the conductivity of the clay by mixing it with graphite.

Dr. W. T. Bishop said that the main object was to secure proper conductivity, and this was done by having the electrode moist; but it must be evenly moist, and of uniform thickness. As prepared by many operators, it varied greatly in thickness and consistency. Unless the metal plate is made to cover the entire surface there must be some points where the current is more dense than at others, and to that extent the efficiency of the electrode was destroyed. A thoroughly moist electrode consisting of clay mixed with graphite would probably cause the best diffusion of the current. Dr. Mosher's suggestion was also an admirable one.

Dr. Massey was not favorably impressed with the suggestion to add graphite, first, because it would make the electrode very dirty, and secondly, and more important, because one of the objects of a conducting joint between the metal and the skin is to modulate the passage of the current. Probably the most perfect electrode would be a piece of fresh meat, as we wish to transfer the current from the metal to the skin without too sudden a change in the resistance. The preparation of his clay electrode was delegated to the office nurse, who carefully kneaded the clay with her hands before making it into a pad of the required size. Mosquito netting was placed under the clay, and sometimes he placed on the top of the clay, instead of the spiral, a lead plate, cut in the shape of a Maltese cross. Where there are scratch-marks, or pimples on the skin that portion of the plate over there is raised a little.

Dr. Mosher said that she protected such sensitive spots, and very often, the navel also, by slipping a glass microscope slide underneath this part of the plate.

Dr. Dickson described an electrode which he was endeavoring to construct in such a way as to be free from the disadvantages connected with other electrodes. His idea was to use a large rubber cup filled with absorbent cotton moistened with some saline solution, and to make metallic connection by means of tin or lead cut in various shapes.

The President said that in the construction of an electrode it was important to remember that the removal of the point of metallic conduction from that of electrolytic conduction, diminishes the pain: A piece of fresh meat was probably the ideal electrode, as regards conductivity.

Professor Houston remarked that Dr. Dickson could easily have a metallic coating deposited on his flexible diaphragm.

Dr. Massey said this would be quickly destroyed when used as the external positive pole, and the metal would be carried into the patient's body. At one time, when experimenting with flexible plates, he had used a piece of Turkish toweling, thoroughly wetted, on which was placed a lead plate. This was used as a dorsal electrode on a case of alcoholic paralysis which he was treating at that time, and it was his custom to keep one such electrode for each patient. After some months of treatment, he was surprised to find that this electrode had been greatly diminished in size. Of course, a good deal of the metal was caught in the towel, but it was probable that an appreciable portion also found its way into the patient.

Dr. Nunn in closing the discussion, said that the sole object of his paper was to elicit a discussion on this important subject. He had found the electrode described in his paper, very well adapted for rapid office work. After trying various animal membranes, he had found chamois leather the best. The unhandiness of the clay, and the difficulty of getting it evenly mixed, had been well brought out in the discussion. Dr. Mosher's meal poultice was a capital idea. Electrodes of clay mixed with graphite had at one time been in the market, but he could not recall by whom they were manufactured. To protect scracth-marks, and other sensitive spots, he applied small bits of rubber tissue. The hollow electrode described by Dr. Dickson, is very similar to the one devised by Dr. Franklin Martin.

(To be continued.)

DOMESTIC CORRESPONDENCE.

The Code of Ethics.

To the Editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION:

For more than forty years the writer, from frequent perusal and constant familiarity with the "Code of Ethics" as originated by Percival and amended by the American Medical Association, has been led to regard it as the embodiment of the wisdom of the profession touching their relations to themselves and to their fellowmen; and he cannot but feel profound misgivings at the proposition now under discussion to abolish that time-honored instrument and to substitute therefore a so-called modernized code, adapted. it is alleged, to the assured needs of the profession, and conformed to the requirements of precision and brevity. Conciseness in a rule of action for the guidance and government of the busy multitude is a desideratum to be had at any cost short of obscurity, and this is especially true when the law is upheld by the authority of legislative enactment; but when its sanction rests solely on the consent of the governed, the *raison d' etre* should be distinctly stated and not promulgated in the tone of autocratic dictation.

There are few men competent to form an opinion on the literary merits of a paper who, after careful and impartial reading of the Code, would not admit that as a specimen of English "pure and undefiled" it does honor to the scholarship of its authors. Its style is perspicuous without dogmatism, copious without redundancy and elegant without pedantry. Its tenets have no flavor of magisterial assumption but are formulated in reason and justice, so plainly set forth that the "wayfaring man, tho' a fool, need not err therein." The writer desires only to express his hearty approval and unqualified endorsement of "Conservative" in the ground he has so admirably maintained, in his contributions to THE JOURNAL of Dec. 10, 1892, and January 14, 1893.

A. N. TALLEY, M.D.

Columbia, S. C., February 10, 1893.

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SATURDAY, FEBRUARY 25, 1893.

TUBERCULOSIS OF THE FEMALE GENERATIVE ORGANS.

The Johns Hopkins Hospital Reports, Vol. III, Nos. 1, 2, 3, contains an article by DR. J. WHITRIDGE WILLIAMS, in which the subject of tuberculosis of the generative organs of woman is presented in its entirety. There are many points of interest to all physicians brought out by this thorough study and among them we would refer especially to the undoubted frequency of genital tuberculosis which appears to be far greater than was ever suspected and the disease consequently deserves more practical attention on the part of the gynecologists. DR. WILLIAMS found genital tuberculosis seven times in ninety-one cases in which the tubes and ovaries were removed for purulent process or for adhesions; in other words, genital tuberculosis may be expected to occur in about one out of every twelve operations for the removal of tubes and ovaries the seat of past or present inflammatory disease; in only two out of the seven cases was the disease recognized at the time of the operation, so that in 70 per cent. of these cases the disease would have escaped observation were it not for the routine examination practised with the microscope; it will consequently become evident that up to this time most of the statements as to the frequency of genital tuberculosis represent only one quarter of the actual number of cases, the other three quarters having previously escaped attention. The order of frequency for the various portions of the genital tract is as follows: tubes, uterus, ovaries, vagina, cervix, and vulva; for obvious reasons a definite, numerical statement as to the actual comparative frequency in these various parts cannot yet be made.

There are also certain points in the etiology of female genital tuberculosis to which the observations and literary researches of DR. WILLIAMS call particular and emphatic attention. He shows that generally speaking tubercle bacilli may gain entrance to the genital tract in three ways: 1. From areas of tuberculosis already existing in the patient; 2. from the outer world by direct infection; and 3, by bacilli from the excretions of tuberculous patients invading the genital tract as in cases of tuberculosis of the urinary organs or intestines. With reference to the first mode of infection mentioned, the following general statement summarizes fairly well what is said on that point: The majority of cases of female genital tuberculosis are secondary to tuberculosis elsewhere in the body, and are due either to infection from the blood or from neighboring organs.

The question as to direct infection from the outer world is one of great interest. Tubercle bacilli are universally distributed and they may gain access into the vagina in a multitude of ways; by the examining finger, the use of dirty instruments, of foul syringes, of unclean linen, and in many other ways, but particularly by coitus with men affected with various forms of uro-genital tuberculosis. The frequency of this disease in all parts of the genito-urinary tract in men suggests opportunity for infection; and from the investigations of JANI we have a right to believe that in some instances phthisical men might introduce bacilli into the vagina without any tubercular lesions of their genitals. In spite of numerous reported cases of suspected infection by coitus, its occurrence cannot as yet be considered as proven by scientific methods, and scientific proof is manifestly very difficult to bring forward in this instance because the possibility of infection from the blood can never be positively excluded. Owing to the resistant structure of the healthy vagina and the cervix, and to the periodical menstrual exfoliation of the uterine mucosa, we would naturally not expect the disease to develop in these parts as readily as it would in the tubes, to which the bacilli might be carried by the lymphatics from vaginal abrasions or directly through the uterus. Such reasoning as this would serve to explain why the tubes are so much more frequently affected than the uterus, even in primary cases. The occurrence of infection by coitus, though not conclusively demonstrated as yet, is nevertheless very probable, and, of course, if infection in this way holds good for women, it also applies to men, and the family physician should consequently prohibit coitus between persons, one of whom has genito-urinary tuberculosis. DR. WILLIAMS also considers fully the clinical history, the diagnosis, and the treatment of tuberculosis of the female genital organs, and we feel sure that his excellent presentation of this interesting subject in all its aspects will do much good because it will rescue the study of female genital tuberculosis from the neglect at the hands of gynecologists, writers, and teachers into which it appears to have fallen on account of the supposed rarity of its occurrence.

RITUALISTIC CIRCUMCISION.

At a meeting of the Berlin Dermatological Society in 1892, DR. LEWIN spoke on the subject of ritualistic circumcision and its therapeutic indications. He stated that the prepuce is not a very favorable ground for infection, being thick, elastic, and not easily torn; as it contains parallel muscular and some elastic fibres, it is mobile and extensible to double its volume. It has neither sudoriparous glands or hair, and its sebaceous glands serve to maintain the suppleness of the skin. Being of inconsiderable volume, ulcers do not penetrate it deeply, and it is rarely the seat of a gangrene for which it need be amputated, and any mode of treatment may be employed for its diseases.

The other portions of the penis are less favorably formed for treatment; the glans, containing few elastic fibres, is neither mobile or extensible, and ulcers occurring therein are prone to pursue a destructive course. The retro-glandular furrow is easily torn or fissured, the numerous sebaceous glands opening therein form reservoirs for the retention of the secretion, and sixty per cent. of the cases of ulcer that are situated on this portion of the penis are followed by buboes. The frenum is less favorable for the development of ulcers, but it is easily torn.

If the prepuce is amputated the glands of TYSON dry up, the fat of the internal surface is lost and a resistant cicatrix remains.

In no part of the Bible is circumcision referred to as a sanitary procedure, nor was that suggestion of its desirability made until a much later epoch than that of the writing of the Scriptures. In the beginning, circumcision was nothing more than a legacy from the heathen cult of Moloch.

In a thousand cases of ulcer of penis treated by LEWIN at the Berlin Charité, almost fifty per cent. were on the prepuce, nineteen per cent. on the glans, fifteen per cent. on the corona, nine per cent. at the meatus, and the remainder on various portions of the penis.

DR. SAALFIELD believed that LEWIN'S statistics showed that the prepuce was a *locus minoris resistantiæ;* besides erosions thereon, the accumulation of smegma favored balanitis, and both these predisposed to infection.

DR. ROSENTHAL remarked that as in erection the prepuce was retracted and everted, the other portions of the penis being uncovered as well, the least resistant portions would be affected. It would therefore be interesting to know what proportion of venereal ulcers occurred on the internal surface of the prepuce.

To these criticisms LEWIN replied that the internal surface was often affected because it projected somewhat during erection; but the reason that the prepuce was so often the seat of venereal ulcers was because infection occurred during coitus from lesions most frequently located on the labia majora and minora and not on the cervix uteri. The statistics he gives seem to show that the prepuce is a rather favorable ground for infection, though if evidence could be obtained regarding the site of lesions in an equal number of circumcised and uncircumcised persons, it would be possible to judge more definitely regarding the value of circumcision as a prophylactic operation.

From a religious standpoint it is a relic of barbarism, and from a medical standpoint PROFESSOR MASTIN has shown the unfortunate anatomical changes it induces, while the physician must remember that for him to recommend it from a prophylactic standpoint is tantamount to advising illicit and promiscuous sexual relations.

CHOREA.

The *questio vexata* as to the pathology of chorea appears to receive a satisfactory solution in the admirable clinical lecture of PROFESSOR H. C. WOOD, of Philadelphia, appearing in another column, which has been reported exclusively for THE JOURNAL; and which we do not doubt will be fully appreciated by our readers. Hitherto, the important physiological function of inhibition, which BROWN-SEQUARD cited so effectually in support of his theory of the causation of cerebral convulsions and paralysis, has been entirely overlooked in studying the pathology of spinal affections. This is the more remarkable since the fact of the independent action of the spinal cord as a reflex centre has been known since the days of MAGENDIE and JOHN HUNTER. Up to the present time, however, DR. WOOD'S theory is the first application of this well known physiological observation to explain the phenomena of functional nervous disease. As DR. WOOD has pointed out, this explanation will apply in hysteria as well as in chorea, neither of which is attended by increased motorial excitement in reality, but by decreased inhibition. The form of chorea due to disease of the cortical motor centres in the brain, of which the lecturer gives a good illustration, is, properly speaking, no chorea at all, but is merely a symptom of cerebral disease, and is analogous as a symptom to the muscular motions of paralysis agitans or post-paralytic tremor. The disease known as chorea, or St. Vitus' dance, appears to be spinal in its origin, and therefore may be, and very probably is, due to deficient inhibition and overflow of motor impulses. If time shall confirm this theory, which is certainly logical, and so far has been supported both by experiment and clinical observation, we shall have to congratulate PROFESSOR WOOD upon his valuable discovery, and our readers upon receiving its first public announcement in medical literature.

THE AMŒBA COLI: ITS RELATION TO DYSENTERY AND TROPICAL SUPPURATIVE HEPATITIS.

In the *Indian Medical Gazette*, for November, 1892. SURGEON-CAPTAIN PATRICK HEHIR, of Hyderabad, gives the results of some of his studies on the organisms found in tropical dysentery and hepatic abscess. He is particularly fortunate in being located in a region in which these affections are very prevalent. As causes of the epidemic of dysentary which he observed he mentions 1. The amœba coli; 2. Malaria; 3. Exposure to sudden vicissitudes of temperature; 4. Putrefaction of animal matter, especially that of human ordure; 6. Infection from other cases of dysentery; 6. Mechanical and other engorgement; and 8, *Bacillus dysentericus*. In the evacuation of dysenteric patients the amœba coli was found frequently, but not invariably; and it was also found in other bowel affections, as the mucus enteritis of infants, simple diarrhœa, and in some cases of catarrhal inflammation of the rectum, due to engorgement. The *bacillus dysentericus* found by HEHIR, and considered pathogenic, was found associated with the amœba coli, and is described as a short, straight bacillus, usually of a length about equal to one-third the diameter of a red blood corpuscle, with rounded ends sometimes jointed, rarely cured. These bacilli were sometimes present in vast numbers. They were sometimes found in the substance of an amœba coli, and when lying in the vacuoles of the amœba they could be easily seen. They stained well with methyl blue. No culture experiments with this microbe are recorded. This bacilli was often found in the pus of liver abscesses; but in four cases in which he was able to demonstrate the amœba coli in aspirated peritoneal fluid, HEHIR failed to find his *bacillus dysentericus*.

Since he has succeeded in demonstrating the amœba coli in the peritoneal effusion of suppurative hepatitis following dysentery; HEHIR is strongly in favor of the views of COUNCILMAN, who maintains that one mode of liver infection from dysentery is brought about by the amœba passing through the walls of the diseased bowel, and across the peritoneal cavity to the liver. In fact, he believes that this direct infection is the chief importance in the production of liver abscess of amœbic dysentery, rather than the infection by means of emboli along the blood or lymph streams.

THE PERSONNEL OF STATE MEDICAL EXAMINING BOARDS.

It is with pleasure that we notice the attempt at medical legislation in the different States and that the excellent Minnesota law is taken as the basis, as it has proven itself exceptionally effective.

Several legislatures have before them bills closely following the lines mapped out in Minnesota. We read with regret however, that there is much opposition in certain quarters in reference to the composition of the board. After much thoughtful consideration, at the time of the passage of the Minnesota statute, it was deemed expedient to make the *board* entirely free from the influence of any medical school. It, therefore, made any member of a medical faculty ineligible to membership on the Board of Medical Examiners. Time has proven the wisdom of the framers of the law, in insisting on this provision. We would strongly urge that this provision be included in all the statutes, and trust that in further reflection the opposition to this proviso will cease.

It is undeniable that a board with no member of any medical faculty should be non-partisan. There can be no reason for a bias in favor of any school. Such a board will also have less occasion for friction. The profession at large will have more confidence in such a board and last but not least the general public will have less occasion for twitting us with attempting class legislation if they can be assured that it is wholly non-partisan.

The membership of these boards is of vital importance to the successful working of the law, secondary only to the provisions of the law itself. It should be a matter of profound regret, if, after success in the passage of a law, its provisions should be partially nullified by a non-harmonious board.

A wholly disinterested board except as to the personal qualifications of each candidate—a board which has no interest in the record made by the graduates of any particular school or medical college—such a board, we maintain is a desideratum. A board constituted in any other manner, we fear, will jeopardize success. The more one studies the question, the more confident one becomes, that the greatest factor in the successful execution of these medical laws is the entire divorcing of Examining Boards from any and all medical schools.

PAN-AMERICAN MEDICAL CONGRESS, SECTION OF MILITARY MEDICINE AND SURGERY.—The following gentlemen have been duly appointed members of the Advisory Council of this Section: Col. Louis Read, M.D., Surgeon-General N. G., Pa.; Newton L. Bates, M.D., Medical Director U. S. N.; J. H. Tryon, M.D., Medical Inspector U. S. N.; Lieut.-Col. Eustathius Chancellor, M.D., Medical Director N. G., Mo.; Brv't Lieut.-Col. A. A. Woodhull, M.D., Surgeon U. S. A.; Major Jos. H. Corson, M.D., Surgeon U. S. A.; Major Geo. Henderson, M.D., Medical Director N. G., D. C.; C. N. Hoagland, M.D. Ex-Surgeon Ohio Vols.; Bedford Brown, M.D., Ex-Surgeon C. S. A.; H. C. Goodman, M.D., Ex-Surgeon U. S. Vols.; Melancthon Storrs, M.D., Ex-Surgeon Conn. Vols.; O. D. Ball, M.D., Pension Ex-Surgeon, Albany, N. Y.; Capt. H. O. Perley, M.D., Asst. Surgeon U. S. A.

GEO. M. STERNBERG,
Deputy Surgeon-General U. S. A., Pres. of Section.

A BOARD of officers will be convened at Washington, March 30, 1893, for the purpose of examining applicants for admission to the grade of Assistant Surgeon in the U. S. Marine-Hospital Service.

Candidates must be between twenty-one and thirty years of age, graduates of a respectable medical college, and must furnish testimonials from responsible persons as to character.

The following is the usual order of the examination: 1, physical; 2, written; 3, oral; 4, clinical.

In addition to the physical examination candidates are required to certify that they believe themselves free from any ailment which would disqualify them for service in any climate.

The examinations are chiefly in writing, and begin with a short autobiography by the candidate. The remainder of the written exercise consists in examination on the various branches of medicine, surgery and hygiene.

The oral examination includes subjects of preliminary education, history, literature, and natural sciences.

The clinical examination is conducted at a hospital, and where practicable candidates are required to perform surgical operations on the cadaver.

Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order, as vacancies occur.

Upon appointment the young officers are as a rule first assigned to duty at one of the large marine-hospitals, as at Boston, New York, New Orleans, Chicago or San Francisco.

After four years' service, Assistant Surgeons are entitled to examination for promotion to the grade of Passed Assistant Surgeon.

Promotion to the grade of Surgeon is made according to seniority, and after due examination as vacancies occur in that grade. Assistant Surgeons receive sixteen hundred dollars, Passed Assistant Surgeons eighteen hundred dollars, and Surgeons twenty-five hundred dollars a year. When quarters are not provided, commutation at the rate of thirty, forty, or fifty dollars a month, according to grade, is allowed.

All grades above that of Assistant Surgeon receive longevity pay, 10 per centum in addition to the regular salary for every five years' service up to 40 per centum after twenty years' service.

The tenure of office is permanent. Officers traveling under orders are allowed actual expenses. For further information, or for invitation to appear before the board of examiners, address:

WALTER WYMAN,
Supervising Surgeon-General,
U. S. Marine-Hospital Service, Washington, D. C.

GERMANY AND THE PAN-AMERICAN MEDICAL CONGRESS.

AN OPEN LETTER FROM PROFESSOR CZERNY, OF HEIDELBERG, AND REPLY BY SECRETARY-GENERAL REED.

(Translated from *Deutsche Medicinische Wochenschrift*, Jan. 12, 1893, p. 47.)

AN OPEN LETTER

To CLAUDIUS H. MASTIN, M.D., LL.D., Mobile, Ala., President of the American Surgical Association, in reference to the Pan-American Medical Congress:

Honored Sir and Colleague,—You were kind enough to extend to me, December 3, 1892, a personal invitation to attend the Pan-American Medical Congress, to be held at Washington, September 5 to 8, 1893. According to the preliminary announcement, and to your communications, the Congress, in connection with the Columbian exposition at Chicago, will offer so many attractions that I exceedingly regret not to be able to accept so amiable an invitation extended to me by one of the most prominent members of the body of American physicians.

As the reasons which prevent me from attending might be of interest to the German physicians, you will certainly pardon my desire to make these reasons more generally known in this manner.

At the first glance, one might have been impressed with the idea that the Pan-American Congress was intended to be a rival to the long-prepared International Medical Congress, which is to be held at Rome, from September 24 to October 1, 1893. However, as at the former international expositions, almost always contemporary medical and scientific congresses took place, it appears but just that the American physicians should also avail themselves of the opportunity of meeting on their own continent. But since the physicians of all civilized countries are united in the humane endeavor to rather mitigate than to increase difficulties between nations and continents, where such exist, I, therefore, think any intention to injure the International Congress by the Pan-American, must be entirely excluded.

Perhaps the meeting of the International Congress might be postponed eight days, which, for several reasons, would be more desirable. With earnest intentions and favorable weather, it ought to be possible to make the trip, with the modern fast steamers, from Washington to Rome, from September 9 to September 23. *It would not be a bad idea if those members who desire to make the journey would do so jointly, directly from Washington to Rome, on a steamer chartered expressly for that purpose*, in order to bring the greetings of the rising capital of the promising West to the old Metropolis of European civilization.

A more serious consideration to visit the Pan-American Congress is entertained by me regarding the question of languages. In section 9 of your programme it says: "The language of the Congress shall be Spanish, French, Portuguese and English." The German language is probably excluded because it is nowhere official language in America. If this consideration should have prevailed, then the Dutch and Danish languages ought to have been permitted, since these languages are in official use in America. Be this as it may, *I do not think that the physicians of Germany can take part in the proceedings of the Pan-American Medical Congress, if they are not permitted to read their papers in German*, while any other language but the English is admitted at the Congress. It must be remembered that also at the International Congress "Remarks are permitted in any other language, if any of the members are willing to translate them into one of the four official languages."

I shall not mention the work done continually for the science of medicine in the German language, but I desire to refer to the great number of prominent American physicians who have received the best part of their education in German schools; and to the numerous German physicians who practice with success in America, and who have added so much to the great reputation in which American medical literature is at present held in the whole world. Indeed, I am inclined to believe that North and South American physicians will frequently be able to communicate with each other in the German language, learned by them in our universities. If I am not mistaken in this, I certainly think that the Executive Committee of the Pan-American Medical Congress should pass a resolution which would enable German physicians to visit the Congress, provided a participation on our part is at all desired.

I shall be exceedingly gratified if my suggestions should find favor on the other side of the ocean; and if I should be thus enabled, dear Sir and colleague, to personally enter into friendly relations with you in Washington.

With best wishes and compliments of the season, I am,

Yours respectfully,
DR. CZERNY,
Honorary Member of the American Surgical Association.

HEIDELBERG, December 28, 1892.

(REPLY.)

THE PAN-AMERICAN MEDICAL CONGRESS,
Office of the Secretary-General,
311 Elm Street.
CINCINNATI, February 14, 1893.

PROFESSOR V. CZERNY, Heidelberg:

My Dear Doctor.—My distinguished colleague, Dr. C. H. Mastin, has referred to me for official reply your open letter addressed to him and published in the *Deutsche Medicinesche Wochenschrift*, for January 12, of this year.

A careful reading of your valued communication leads me to the conclusion that you in common with other distinguished German *savants*, hesitate in accepting an invitation to attend the Pan-American Congress 1, because the

German profession is not officially invited by the Executive Committee to become a constituent part of the Congress; 2, because the German language is not one of the official languages of the Congress, and 3, because a general participation on the part of yourself and confreres might be construed into disloyalty to the International Medical Congress which is to meet in Rome, in the same month.

In reply I beg to state, that the occasion for holding a medical Congress in the United States in 1893, is the fact that a large number of physicians will be in this country in attendance upon the World's Columbian Exposition. This attendance will be largely, although not by any means exclusively, from the countries of the Western Hemisphere. It would have been very desirable indeed, to have arranged an organization which would have embraced all the countries of the world. The medical profession of the United States, however, acknowledges allegience to the World's International Congress which is to meet in Rome. To have attempted an organization in Germany or any other European countries in the interest of the American meeting, would have been in violation of our loyalty to the International Congress, while an official invitation to the government and medical societies of Germany and other European countries to send delegates to the Washington meeting would have been almost inimical to the interests of the Rome Congress. It was, therefore, resolved that the organization should be limited to the American countries, and that while it was desirable to secure the attendance of our distinguished confreres from Europe as guests, invitations to that end should be strictly personal in character, and should be issued by the general officers and presidents of sections, at their discretion.

The languages chiefly spoken by the various constituent countries of the Congress are Spanish, Portuguese, and English, and these were accordingly selected by the Committee as the official languages of the Congress. French, which the language of important colonies and communities, was subsequently added, at the instance of our confreres in Brazil, who employ it largely in scientific communication, as, indeed, do a large proportion of the physicians of both the English and Spanish-speaking countries. Danish and Dutch are not included, simply for the reason that it is extremely, indeed, practically impossible, to deal with them satisfactorily in a literary way in this country. It was hoped that delegates from countries and colonies speaking other than Spanish, Portuguese, English and French, would furnish their remarks on papers in one of the official languages. This was so thoroughly understood by the committee and has become such a well established usage at international congresses, that it was not deemed necessary to state it explicitly; but I shall communicate the suggestion which you kindly make to the Executive Committee, when I have no doubt it will be made definite in the By-Laws.

As early as December, 1891, I opened correspondence by telegraph with the President of the XI International Congress, and subsequently with Professor Maragliano, of Genoa, the Secretary-General, asking that the date of the Rome meeting be arranged so as to permit us to send delegates from Washington. The date of the International Congress was accordingly changed from the 17th to the 24th of September, which will give us sixteen days in which to go from Washington to Rome. Arrangements were begun in February of last year for a special sailing of a steamer September 9th, direct to Italy, by way of the Azores and Gibralter to take those desiring to attend the Rome meeting, a special reduced rate being accorded for the occasion. My present correspondence indicates that a large number will avail themselves of this privilege. It is highly gratifying to note that the expediency of this plan has occurred quite independently to one so conversant with affairs as yourself.

Permit me to say in conclusion that our European confreres who may honor the Pan-American Medical Congress with their presence will be accorded every linguistic privilege, that arrangements have already been made for their return to Italy in time for the International Congress, and that in the event of their coming they will be greeted with a most cordial American welcome.

Very sincerely yours,

CHARLES A. L. REED,
Secretary-General P. A. M.C.

Approved:

WILLIAM PEPPER, *President.*
CLAUDIUS H. MASTIN, *Member of the Board of Trustees.*

NECROLOGY.

W. W. Dawson, M.D.

It is our mournful duty to record the death in Cincinnati, Feb. 16, of Dr. William W. Dawson, a Trustee of and Ex-president of the American Medical Association.

Born in Berkeley County, Virginia, Dec. 19, 1828. While a child his parents moved to Green Co., Ohio, where he received a good classical education. Later he became a student of medicine in the office of an elder brother, the late Dr. John Dawson, and attended lectures in the Medical College of Ohio, where he graduated in 1850. He served one year in the Commercial Hospital as an interne, and two years after leaving the hospital was chosen professor of Anatomy in the Cincinnati College of Medicine and Surgery, holding this position for three years. From 1860 to 1864 inclusive, he occupied the chair of Anatomy in the Medical College of Ohio. From 1864 to 1870, he as a member of the surgical staff lectured on clinical surgery in the Cincinnati Hospital, and in 1870, was chosen professor of surgery in the Medical College of Ohio, lecturing there until 1884, when he resigned the didactic part of his professorship, and continued his clinical lectures until the beginning of his fatal illness.

In 1869, Dr. Dawson was elected president of the Cincinnati Academy of Medicine, and two years later president of the Ohio State Medical Society. In 1871, he was appointed surgeon to the Good Samaritan Hospital. During all his professional life he enjoyed a large and remunerative practice, and in 1888, as a crowning glory of his professional career, he was elected president of the American Medical Association. The succeeding winter he suffered from a severe attack of the grippe, and had a number of relapses. Those who were present at the Newport meeting of The American Medical Association will remember his affliction at that time, and when those who were intimate with him prognosticated the fatal termination which has just taken place.

Dr. Dawson was much more than a good surgical operator, his diagnostic ability and knowledge of pathology was not excelled in his day. His loving kindness to those who sought his services will never be forgotten. His generosity and open hearted hospitality was without bounds. While on all occasions he was the highest type of nobility in his profession. Courteous to all and the very soul of honor. No man ever feared professional poaching or unfair treatment from Dr. W. W. Dawson. His personal friends were almost as numerous as the inhabitants of his city. He was truly one of Nature's most loveable noblemen. We ne'er shall see or know his like again.

Dr. James Bell.

Dr. James Bell, an ex-president of the Kansas Medical Society, member of the American Medical Association and of the Ninth International Congress, died at his home in Olathe, Kansas, Jan. 13, 1893.

Dr. Bell was born in Washington, Pa., in 1826, of Scotch-Irish ancestors. In his early life his parents moved on a farm in Mahoning Co., Ohio, where, while yet a youth, his mother was left a widow with 18 children. With the pluck of his race he assisted in raising the family, obtained a fair education, and when 28 years old graduated at the medical department of the Western Reserve University, and commenced practice at New Concord, O., where he continued until 1869, meanwhile spending a winter in Philadelphia and graduating from Jefferson in 1864.

In 1869 he moved to Olathe, Kansas, where he remained in practice to the time of his death. He was twice married

and leaves a widow and four children. The doctor was a Scotch Presbyterian and sufficiently tenacious of his views, both medical and religious, to become a martyr or to make martyrs, but during his last illness, which was quite prolonged, from yellow atrophy of the liver, he adopted that broader charity that forgives as it would be forgiven, and accords to others what it reserves to itself, the right of individual belief, and died at peace with God and man, and in the hope of a glorious immortality.

DR. WILLIAM B. DAVIS, of Cincinnati, died at his home in that city February 16. The cause of death being a heart lesion superinduced by an attack of grippe two years ago. Dr. Davis was born in Cincinnati July 2, 1832, his academic education was obtained at Woodward and Delaware Colleges, and his professional courses were taken at the Miami and Ohio Medical Colleges. During the War he served for a brief period as surgeon of the 137th, O. V. I. Reg., after which he spent some time in Europe. On his return he was elected Professor of Materia Medica in the Miami Medical College. This chair he held for a number of years.

Dr. Davis was the author of many papers which were read before the local medical societies, the Ohio State Medical and the American Medical Association. His two last contributions were read at late meetings of the latter body and on the subject of albuminuria in its relation to renal affections, attracting unusual attention.

Dr. Davis was a man of much public spirit, serving his city as a member of the Board of Education, as one of the founders of the Public Library and Director of the Cincinnati University. From its organization he was one of the Medical Directors of the Union Central Life Insurance Company. From childhood he was an active member of the Methodist Episcopal Church, and to which he contributed largely of his means. Dr. Davis was a highly esteemed and influential citizen, a cherished and true friend, a beloved physician, and typical Christian gentleman.

BOOK REVIEWS.

THE MODERN ANTIPYRETICS; THEIR ACTION IN HEALTH AND DISEASE. By ISAAC OTT, M.D. Second Edition. Paper. Easton, Pa.: E. D. Vogel. 1992.

The large amount of valuable information incorporated in this little volume of 125 pages deserves a better dress than is afforded in its present unpretentious and modest form.

The author's contributions to this branch of pharmacological investigation are well known, and give increased importance to his views. The work is subdivided under the heads: Heat, Thermotaxic Apparatus, Cortical Thermotaxic Centers, Heat Production in Normal and Febrile State, Fever, Physiological and Pathological Action (of antipyretics), Chemistry and Therapeutics of the Modern Antipyretics, with a closing chapter on the Value of Antithermics in Typhoid Fever. It will here be seen that the subject is discussed in a scientific and logical manner, and with the author's rich experience as an experimental paysiologist, the work assumes a very practical character.

Now that so many new antipyretic agents become available, it certainly behooves the thoughtful physician to inquire into the chemistry and pharmacology of his favorite antithermic drug. He will find a concise and practical summary of the subject in this little book. Then too, the experimental physiologist and pharmacologist will find much valuable data between the unassuming covers of Dr. Ott's work.

MISCELLANY.

THE GOVERNMENT OF VENEZUELA AND THE PAN-AMERICAN MEDICAL CONGRESS.—Señor P. Ezequiel Rojas, the Venezuelean Minister of Foreign Affairs, has forwarded on behalf of his government through the U. S. *Chargé d'Affairs* at Carracas, a formal acceptance of the invitation issued pursuant to the joint resolution of the United States Congress to the various governments of the Western Hemisphere to send official delegates to the Pan-American Medical Congress. The selection of delegates has not yet been made, but the names will be forwarded at the earliest possible moment.

COMMENCEMENT OF THE MEHARRY COLLEGE.—The seventeenth annual commencement of the Meharry Medical Department, of Central Tennessee College, Nashville, Tenn., was held at the Gospel Tabernacle, Feb. 7, in the presence of an audience of more than three thousand people. There were thirty-six graduates in Medicine, two in Dentistry, and six in Pharmacy.

During the past session one hundred and twenty students in medicine, seven in dentistry and twenty-one in pharmacy were enrolled.

About one-half of the educated colored physicians of the Southern States are graduates of this institution.

THE forty-second annual session of the Iowa State Medical Society will be held at Burlington, Iowa, Wednesday, Thursday and Friday, May 17, 18 and 19, 1893.

OFFICIAL LIST OF CHANGES in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from February 11, 1893, to February 17, 1893.

First Lieut. Isaac P. Ware, Asst. Surgeon U. S. A., is granted leave of absence for one month.

Col. Joseph Smith, Asst. Surgeon-General U. S. A., is granted two months' leave, with permission to leave the United States.

Major J. V. D. Middleton, Surgeon, will in addition to present duties as post surgeon of the Presidio of San Francisco, Cal., perform the duties of Medical Director Dept. of California, during the absence of Col. Joseph R. Smith, Asst. Surgeon-General U. S. A,

First Lieut. Frederick P. Reynolds, Asst. Surgeon, is relieved from duty at Ft. Monroe, Va., and assigned to duty at West Point, N. Y. Par. 1, 2 and 4 of S. O. 34, A. G. O., February 14, 1893.

Capt. Eugene L. Swift, Asst. Surgeon U. S. A., the suspension of the order assigning him to Ft. Yates, N. Dak., is removed.

A board of medical officers, to consist of Col. Charles H. Alden, Asst. Surgeon-General U. S. A.; Lieut.-Col. George M Sternberg, Deputy Surgeon-General U. S. A.; Major John Van R. Hoff, Surgeon U. S. A.; Capt. Guy L. Edie, Asst. Surgeon U. S. A., is constituted to meet in New York City on the 27th day of March, 1893, or as soon thereafter as practicable, for the examination of candidates for admission to the Medical Corps of the Army, and for such other business as may be brought before it.

First Lieut. Charles Willcox, Asst. Surgeon, is granted leave of absence for one month, with permission to apply for an extension of one month.

OFFICIAL LIST OF CHANGES in the Medical Corps of the U. S Navy, for the Week Ending February 11, 1893.

Asst. Surgeon B. R. Ward, ordered to training ship "Richmond."

Surgeon George F. Winslow, ordered to the U. S. S. "Monterey."

P. A. Surgeon W. F. Arnold, ordered to the U. S. S. "Monterey."

Asst. Surgeon L. L. von Wedekind, ordered to examination preliminary to promotion.

Asst. Surgeon Geo. A. Lung, ordered to examination preliminary to promotion.